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ABSTRACT

The purpose of this study was to evaluate modes of art instruction for children in kindergarten. These modes were derived from an experimental art instruction program. The experimental modes consisted of all possible combinations of the following instructional components: (1) a series of charts demonstrating Line, Shape, Color, and Texture-Pattern; (2) art consultants; and (3) special in-service training for teachers. At the extremes, the full program as one mode was compared to a spontaneous, unstructured art learning situation as another mode. The sample consisted of 30 kindergarten classes in the Grand Rapids Public School System. They were selected from high, medium, and low socioeconomic school districts. The data were analyzed by means of complex analysis of variance with mode of instruction, socioeconomic status, and length of instruction as the major variables (main effects). Data (art productions) were evaluated by trained art personnel by means of standardized criteria. Statistical reliability among evaluators was computed and found to be high. This study found that mode of instruction and SES were significant. The interaction between SES and mode was also significant. The experimental program had less effect for low SES than high SES children. The length of instruction was not significant. The full experimental mode of instruction was most successful in developing superior art productions. (Author/DB)

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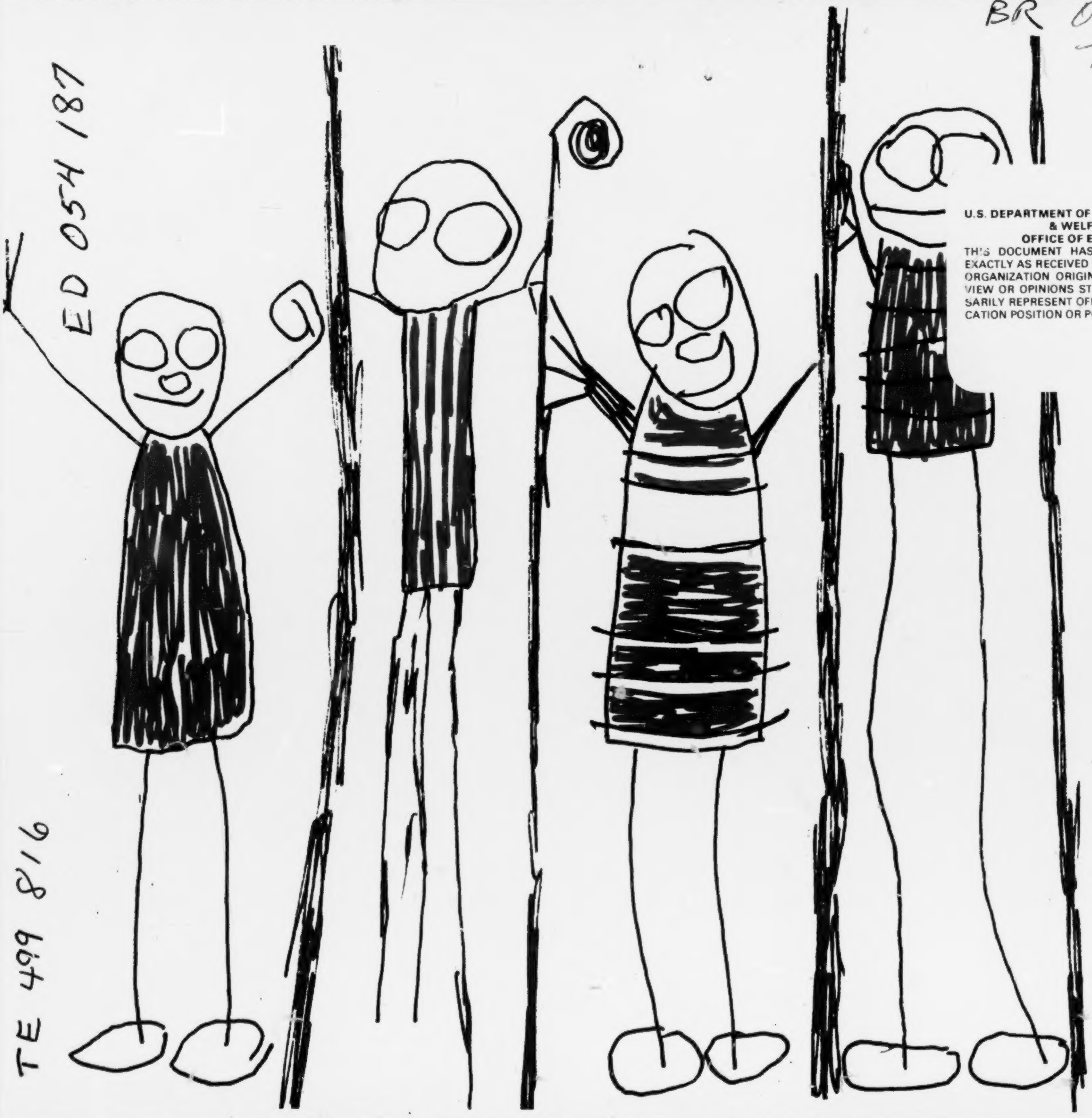

THE DEVELOPMENT OF PERCEPTION IN THE ART PRODUCTION OF KINDERGARTEN STUDENTS

Mary Jane Anway
Theodore Mac Donald

May 28, 1971

U.S. Department of Health, Education and Welfare
Office of Education • Bureau of Research

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GRAND RAPIDS PUBLIC SCHOOLS - WESTERN MICHIGAN UNIVERSITY

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Grand Rapids, Michigan

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The research reported herein was performed pursuant to a contract with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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Mary Jane Anway
Theodore MacDonald

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SUMMARY

The purpose of this study was to evaluate modes of art instruction for children in kindergarten. These modes were derived from an experimental art instruction program. The experimental modes consisted of all possible combinations of the following instructional components: (1) a series of charts demonstrating LINE, SHAPE, COLOR, and TEXTURE-PATTERN; (2) art consultants; and (3) special in-service training for teachers. At the extremes, the full program as one mode was compared to a spontaneous, unstructured art learning situation as another mode.

The sample consisted of thirty kindergarten classes in the Grand Rapids Public School System. They were selected from high, medium, and low socio-economic school districts. The data were analyzed by means of complex analysis of variance with mode of instruction, socio-economic status, and length of instruction as the major variables (main effects). Data (art productions) were evaluated by trained art personnel by means of standardized criteria. Statistical reliability among evaluators was computed and found to be high.

This study found that Mode of instruction and SES were significant. The interaction between SES and Mode was also significant. The experimental program had less effect for low SES than high SES children. The length of instruction was not significant. The full experimental Mode of instruction was most successful in developing

superior art productions. Lower SES children, however, had negligible gains from any Mode of art instruction.

This research was an attempt to specify the effectiveness of a series of modes of art instruction in a public school setting and to identify the differential effect of varying aspects of the program. Instruments developed should be useful in further research.

PURPOSE OF THE EXPERIMENT

Considerable time, effort, and money are spent in public school systems on art education. Much time is allotted each year to art instruction throughout school systems. Varieties of art materials are supplied every year by boards of education for the use of students. Evaluation and research of art education, however, is inappropriately scanty. Usually art educators are not versed in scientific research, and the idea of the application of research to art seems alien.

Scientific investigation in art is not, as it might appear at first glance, a contradiction in terms. Scientific investigation cannot establish standards, priorities, or evaluations of works of art. Research has a different "feeling tone" from art. Proceeding by the canons of logic, objectivity, and the laws of probability, research differs from the subjective, responsive, and intentionally variable communication of the artist.

Research in art education is possible without reducing the creative processes of producing art to a mechanical, routinized parody of spontaneous creativity. In a public education system, the techniques of teaching art must be specified; examination of these specifics and their relationships to desired artistic and educational outcomes is the object of this research. Art instruction can be systematic rather than haphazard and accidental, and the attainment of selected purposes in art education can be measured and researched without stifling the creative experiences indigenous to art. The primary objective of this research is to assess the impact of a structured program of perceptual training in art on the art production of young children.

McFee cites "evidence that past learning prepares us to see with bias" (1961), thus suggesting that early perceptual training is of vital importance. The perceptual style of the young child influences the manner in which he handles visual information gained from his environment. He recognizes, classifies, and interprets his world based on perceptions of it. The development of perception should be of vital concern to education because it is crucial to the full functioning of each individual. McFee continues: "Children can be encouraged to respond both cognitively and visually with more adequate use of cues in interpreting the nature of things" (1961). The visual cues of the environment such as shape, color, line, and texture are important constituents of perception and are the basic elements of art. The relationships of these visual elements are perceived as space, size, scale, detail, position, proportion, and pattern. Art education can make a vital contribution to the development of the child's ability to deal with the abundance of visual cues available to him and to understand and use these visual cues. The visual literacy of the young child can be reinforced through art education.

Perceptual learning is a cognitive process involving knowing, understanding, comprehending and organizing. The young child's developing perception is manifested in his actions and in his verbal responses. He reveals growth of visual, observational and manipulative abilities through his behavior and verbalization. Visual and manipulative experiences can foster flexibility, adaptability, and creativity in him. As he becomes more aware of the world around him, the child seeks integration and relationship of all the "inrushing" information of the feelings, colors, shapes, sizes, numbers, movements and meanings of the people and places he knows. His first drawings are simply physical manipulations and scribblings. Soon he begins to discover the image-making potential of lines, colors, and shapes. His sensitivity to art materials grows; his skill in using pencil, paper, crayon and paint as materials of expression becomes apparent. The child combines his awareness of the world around him and his awareness of art materials into a unique art product. The child's art product thus conveys a unity of idea and of medium; it is this feature which is a manifestation of perceptual integration.

Speaking to this point, Bruner states: "I have recently been struck by the increased visual power and sublety of students exposed to visual design... I do not think we have begun to scratch the surface of training in visualization - whether related to the arts, to science, or simply to the pleasures of viewing our environment more richly..." (1966).

Richard A. Salome in a recent article in The National Art Education Association Journal: Studies in Art Education entitled "Perceptual Training in Reading Readiness and Implications for Art Education" (1968) suggests that according to evidence presented by experimental psychologists, perceptual growth is in part a result of training. He suggests that art programs might be designed to provide a form of perceptual training which will increase the student's visual information-handling ability. Salome contends that most teachers do not relate art instruction to the shape and detail discrimination that are important in reading readiness programs. He suggests that the art specialist may develop the young child's ability to discriminate, compare and recognize visual elements through creative instruction. If we consider aesthetics as the educated choice among alternatives in artistic standards, then perceptual training provided through art education should increase the range of choices which are open to the individual child, increase the options which are available to him, and increase his ability to deal with these choices and options.

There has been much stress on the importance of early childhood experiences in the development of perception. The ability of the young child to "learn" about art may have been underestimated. The question posed in this research is about the effectiveness of art education to help the young child become aware of color, look at lines, see shapes, notice pattern and textures, and enrich and reinforce his perceptual development. An exploration of some varieties of art education to bring visual experience into focus for the young child and transmit art skills to him is essential if the potential of art education is to be realized.

Rudolph Arnheim in his book Art and Visual Perception: A Psychology of the Creative Eye, says in the introduction: "...the exalted kind of seeing that leads to the creating of great art appears as an outgrowth of the humbler and more common activity of the eyes in everyday life. Just as the prosaic search for information is artistic because it involves giving and finding shape and meaning, so the artist's conceiving is an instrument of life, a refined way of understanding who and where we are" (1960). This research project is intended to help the art educator gain insight into providing an environment which will develop art skills, art knowledge, perceptual awareness and aesthetic sensitivity.

Pre-Research Innovations

The idea for this research project developed from previous experimentation with the effects of a modified visual environment at the kindergarten level. The possibility of increasing the perceptual awareness of the child was explored by providing the classroom with Art Charts which were intended to create a stimulating visual environment of color, line, shape, and texture. The display of these charts was accompanied by specified art activities. Sets of eight Art Charts each were made on 30" by 40" mat board, and were designed to fit the bulletin board space in a typical kindergarten classroom. Depending on the basic architectural features of the classroom, some charts became a dominant and impressive part of the visual environment, but, in some classrooms the space did not lend itself to a satisfactory display. Portability was an important feature of the sets of art charts, because they were used for two weeks and then replaced by a new set.

The purpose of the Art Charts was to help provide a stimulating environment in the kindergarten rooms and to provide an important teaching tool for the classroom teacher and the art consultant. The 30" x 40" size used in the first experiment was thought to be effective in the classrooms, but proved to be bulky and difficult to move.

The first set of art charts was concerned with COLOR. Instruction was planned so that the kindergarten teacher had an art activity each day in connection with the charts. The COLOR charts made use of large reproductions of famous paintings in association with color groupings. Art activities related to the charts continued over a four week period.

The second set of art charts was concerned with LINE and explored the use of line in drawings and paintings, in nature and in man-made forms. Daily art instruction centered around line, and continued over a four week period.

The third set of art charts was concerned with SHAPE, and explored geometric shapes and shapes from nature. Suggested art instruction was based on shape experiences, and daily lessons continued over a four week period.

The visual impact of the art charts and the art experiences which this experimental art program offered the young child strongly suggested that the art educator can enliven and vitalize the perceptual development of the young child. Preliminary experience with the art charts suggested that opportunities for creative drawing and painting should be offered on a regular and repeated basis to improve the child's ability to communicate ideas and to use art concepts easily and naturally. Further experience suggested that the learning of the art concepts of shape, line, detail discrimination, direction and size (which are equally important reading-readiness concepts) would be enhanced by intensive art instruction carried on as a part of this experimental program.

On the basis of this experimentation, a research project was designed which would give more specific data on the effects of intensive and systematized art training on the perceptual growth of the young child.

Revision of Art Charts and Their Use in the Research

The first task in preparing for the research study was to redesign and produce a new set of Art Charts. It was decided to use the 28 inch square as a modular unit. The 28 inch square shape could be used in any position or direction. For instance, when the vertical line charts were turned, a horizontal line concept would be suggested. To help solve the varied display problems, holes were punched on the sides of the mat-boards and note book rings used so that the Art Charts could stand in accordian fashion on a table, a counter or even on the floor, if necessary. Use was made of the beautiful colors that were available in the mat-board in the design of the units. (Appendix A)

The COLOR set used 28 inch square charts for the primary colors - red, yellow and blue - and 14 inch x 28 inch charts for the secondary colors - green, orange and purple. Accents of black and white were used along with the tints and shades of the colors in order to support their relationships. The analogous colors - yellow-orange, yellow-green, and blue-purple were mixed and painted on the charts as an integral part of the design. The COLOR charts were developed to coincide with the art instructions in "Talk About Color". (Appendix B)

The SHAPE set made use of the bright colors of the mat-board. The first chart was about squares and the divisions of squares so that the various size relationships of squares could be seen. The Helping Teachers of the Grand Rapids Public Schools found the SHAPE set useful in helping children's math concept learning. The reading consultants also called attention to the importance of the shape and direction concepts.

The second chart was about combinations of squares and triangles. The third chart was about circles and various ways they could be divided. The fourth chart was about combinations of circles, squares, and triangles in varied relationships. Between each of the mat-board charts was a red flannel-covered celotex panel. Colorful felt pieces which would adhere to the flannel were cut in both geometric shapes and shapes from nature relating to animals, birds, fish and plants and could be manipulated by the children and organized to make shape combinations.

The LINE set was organized according to basic types of lines: vertical, horizontal, diagonal, curving, crooked and branching. Terms like vertical and horizontal were used in combination with the charts.

Lines were drawn on colorful mat-board with roving cotton, plastic tape or paint. With a little imagination, they might suggest steps, buildings, telephone wires, trees, roots, lightning, or rivers, etc. Another part of this set was LINE in connection with linear materials. A 28 inch square of pegboard was strung with thin elastic which could be changed and stretched with golf tees poked into the holes, or used as warp through which strips of roving cotton could be woven.

Another pegboard panel had long strings of roving dangling from its top row of holes. The strings could be tied in bows, looped and manipulated. There were two flannel-covered celotex panels, one in red on which to "draw" curving lines with colorful pieces of roving cotton, the other was of red and white striped flannel on which to "draw" with straight lines with felt strips. All panels were colorful but this last one was particularly dazzling.

The TEXTURE-PATTERN set was by far the most difficult and the most interesting to make. The materials used had to be flat in order to be transportable. Classroom teachers were to be encouraged to provide a "texture table" to supplement the Art Charts with rocks, bark, leaves, shells and other nature or man-made materials. When textures were analyzed, they broke down into five major groups - smooth, rough, bumpy, soft, and ribby. The relationship between three-dimensional and two-dimensional textures was explored. This lead to the development of the PATTERN charts and the way various patterns can be organized. Charts were then devised to illustrate pattern in rows, radiating, overlapping, varied spacing, and using stripes, spots and shapes. It was suggested in talking to the children that they organized themselves into various patterns when they lined up in rows at the door to go out to recess, or when they made circles in various ways to play games. This set had rich vocabulary possibilities.

Sixteen sets of these Art Charts were made. Four each of COLOR, SHAPE, LINE, and TEXTURE-PATTERN. Only twelve sets would be in the schools at any given time so that four would be at the Art Workshop and repairs could be made if necessary. Each set of Art Charts was accompanied by the Suggested Art Instruction sheet. Art consultants were trained to assist the kindergarten classroom teacher to work with the charts and the accompanying instruction.

On the basis of these initial efforts, it seemed that the training and the tools that had been given the kindergarten teacher made a noticeable difference in the quality of the child's art experiences and his art learnings. The original intent of providing visual and perceptual stimuli had developed into an innovative method of art education at the kindergarten level. It also became clear that observations and impressions of this method of art education were inadequate to assess its effectiveness. The research which grew out of this program was designed to test various modes of instruction in art. The initial experience with the Art Charts involved the addition of supporting and complimenting instructional components. The idea that the Art Charts were spontaneously understood by the children and could be intuitively used in instruction by their teachers was questioned. The Art Charts grew into a program of art instruction in which the charts themselves were one component part. As has been noted, a Suggested Art Instruction Manual (Appendix B) was developed. Added to this was Classroom Teacher In-Service and Art Consultation as two more segments of this method of art instruction. Each new part of the program added a level of complexity and expense to the original use of Art Charts in instruction. The necessity for the complete program of art instruction should be questioned closely. Consequently, it was seen that the component parts of the Art Instruction Program, Art Charts, Suggested Art Instruction, Art Consultation and Classroom Teacher In-Service could be combined into several "modes" of art education. Research based on a comparison of these modes of art education could help answer the question of how elaborate a system is needed to produce superior art education.

In the initial use of the Art Charts, they were placed in three schools designated inner, middle and outer city schools. These schools were in relatively low, middle and high SES areas respectively. As in other areas of instruction, differences associated with SES were anticipated. In this preliminary, non-systematic program, more effort and time was invested in the inner city school instruction. Impressions of the art educators were that this produced strong increments in growth in art education. While the preliminary work with the program in the low SES school seemed to be effective, an extraordinary amount of time and effort was invested. Thus the question remained: would a program practical to initiate on a large scale basis be effective for lower SES children as well as the rest of the school population?

Two basic questions were asked: (1) What mode of art instruction is most effective? and (2) How do the modes of art education affect students of differing socio-economic status?

RESEARCH PROCEDURES

Independent Variables

The mode of instruction was the first independent variable. The full system, Mode 1, involved the use of four types of Art Charts - COLOR, LINE, SHAPE, and TEXTURE-PATTERN, which were used for instruction by teachers in a given order. Teacher In-Service and Art Consultation were provided. The remaining modes of instruction were partial applications of this instruction.

TABLE 2.1

COMPONENTS OF THE EIGHT MODES OF INSTRUCTION
Component*

Mode	Art Charts	Teacher In-Service	Art Consultation
1	yes	yes	yes
2	yes	no	yes
3	yes	yes	no
4	yes	no	no
5	no	yes	yes
6	no	no	yes
7	no	yes	no
8	no	no	no

*Descriptions of the Art Chart component are in Chapter 1.
A description of Teacher In-Service Training is in Appendix C;
a description of Art Consultant activities appears in Appendix D.

The second independent variable was the SES of the schools to which the modes of art instruction were provided. Inner city, middle city and outer city schools were designated by geographic area and distribution of Title I funds. (Appendix E) An attempt was made to provide at least one kindergarten class in each SES level in each mode. This was largely achieved, though not perfectly.

TABLE 2.2

FREQUENCY OF CLASSROOMS BY MODES OF INSTRUCTION AND SES

SES	Modes of Instruction							
	1	2	3	4	5	6	7	8
Inner	2	1	0	2	1	2	1	2
Middle	2	0	2	0	1	0	1	2
Outer	2	2	1	1	1	1	1	2

Unfortunately, demographic characteristics of the school system and other logistical considerations necessary for the research prevented an equal distribution of classrooms of various SES throughout the eight modes of instruction. Care was taken to provide an equal sample in Mode 1 (full system) and Mode 8 (no system).

The third independent variable was "time period". (Appendix F) All the modes of instruction, except for Mode 8, had four distinct periods of instruction coinciding with the four art elements taught -

COLOR, LINE, SHAPE, and TEXTURE-PATTERN. Children produced art works in all modes (including Mode 8) at the end of each time period. In particular, it would be interesting to note how this variable of duration of instruction interacted with the modes of instruction and the SES of the students.

Dependent Variable

The dependent variable was the quality of art production of the sample of kindergarten students. Each participating kindergarten class produced drawings or paintings at the conclusion of each of four periods of instruction. A total of 2,700 works were produced. Each work was evaluated on four dimensions: (1) COLOR (except for the drawings), (2) LINE, (3) SHAPE, and (4) TEXTURE-PATTERN. Each dimension was rated on a four point scale. The mean rating for all dimensions was the total evaluation of the given art work. Each work of art was coded for school, mode and time period after it was produced. This code was not intelligible to the judges who evaluated the art work "blind".

Development of the Initial Evaluation Protocols

In order to provide a measure of the dependent variable, the Protocols of Evaluation were developed. Based on conceptualized educational goals, four levels of art production were identified in each of the five areas of color, detail, subject matter, shape and composition. (Appendix G) The protocols were originally developed by taking a typical class group of paintings or drawings and sorting them to the most aesthetic quality in four steps, then trying to state these qualities in words.

Three judges, who were experienced art educators, were selected. Part way through the first judging a reliability check was made. The reliability proved to be unsatisfactory.

Redevelopment of the Evaluation Protocols

Proceeding from the analysis of the inadequacies of the original protocols, work was begun anew on the development of the protocols for the dependent variable.

Considering the fact that the Art Charts presented the four major areas of COLOR, SHAPE, LINE, and TEXTURE-PATTERN, it was decided that a new set of protocols should be developed from these dimensions. Examples of children's art work were selected and ranked 1, 2, 3, and 4 for each of the above mentioned dimensions by the researchers. Then the artistic quality of each item was described and the differences between an art work that ranked a 1, a 2, a 3, and a 4 were put into written words.

All old ballots were removed from the children's work and the work was randomized in such a way that judges would not receive "sets" from any one classroom as they had during the first judging.

The Training of the Judges

Three new judges were chosen and a day-long training session instituted. They were all former art teachers who were conscientious and secure enough to hold their own in a disagreement.

First, a well chosen set of paintings (pre-selected as typical examples) was brought out as a "model set" for COLOR, arranged 1, 2, 3 and 4 according to the Protocols. The Protocols were explained and discussed with the judges and applied to the painting. The same procedure was carried out for LINE, SHAPE, and TEXTURE-PATTERN.

Secondly, children's paintings were displayed one at a time for the three judges to decide whether the art works ranked 1-2-3 or 4 in COLOR. Evaluations were gathered and checked to note relative agreement. There was discussion with the judges and emphasis was put on judging according to the Evaluation Scale Protocols.

This process was repeated for LINE, SHAPE and TEXTURE-PATTERN, with discussion after each group to make sure that the protocols were understood. The judges were involved in making suggestions which would assure greater reliability of the Protocols.

As a final training exercise, for further reinforcement, another complete pre-selected set was displayed for judging. Little discussion was necessary this time. Then, some examples of drawings were put up for discussion in relation to the criteria. The reliability checks among the judges on this second test were sufficiently high to warrant the beginning of the judging.

Reliability

The calculation of interjudge reliability was done in three stages; samples of art work evaluation were checked for reliability when one-third of the art work had been evaluated, when two-thirds had been evaluated, and at the conclusion of the evaluation.

Secretly marked pieces were taken from one judge and transferred inconspicuously to the next judge, and then to the third.

TABLE 2.3

PERCENT OF INTERJUDGE RELIABILITY OF ART EDUCATION (N=90)

Reliability Check		Color	Line	Shape	Pattern	$\bar{X}$
#1	Paintings	84	87	78	87	84
	Drawings	---	86	81	83	83
#2	Paintings	79	83	78	86	82
	Drawings	---	92	92	86	90
#3	Paintings	81	86	73	92	83
	Drawings	---	97	86	83	89
All Art Work $\bar{X}$		81	89	81	86	85

Control Variables

Several variables, not controllable in this research, could conceivably affect the quality of the student's art production.

These variables, teachers' subject degree, teachers' years of experience, art consultant years of experience, were all analyzed in relation to the dependent variable.

FINDINGS

In this section, the presentation of data will be organized in the following fashion: first, we will present the two-way analysis of variables for the three independent variables - Mode, SES, and Time with artistic level of art works (paintings and drawings combined) as the dependent variable. Second, we will present the two-way analysis of variance, analyzing the three independent variables with artistic level of drawings as a dependent variable. Third, we will present the same analysis with the mean artistic level of painting as the dependent variable. Next, we will present a summary of the analyses of variance for drawings and paintings by each artistic dimension - SHAPE, TEXTURE-PATTERN, LINE, COLOR. (The data for the analysis of each dimension can be found in Appendix H) Finally, the relationship of the control variables to the dependent variable will next be analyzed through a series of t tests and one-way analyses of variance.

Table 3.1 compares all Modes and SES simultaneously, thus giving an overview of the two major independent variables of the research. The main effect of the Mode of instruction is significant beyond the .01 level as indicated by the F tests. Mode 1 (the full, innovative system composed of Art Charts, Classroom Teacher In-Service Training, and Art Consultation) showed the highest artistic level for all paintings and drawings irrespective of the socio-economic status of the students. The main effect of Mode does make a difference, and this is shown when the artistic level of the art works produced under Mode 1 (the full innovative system) are compared with those produced under Mode 8 (the spontaneous, unstructured non-system).

TABLE 3.1

MEAN ARTISTIC LEVEL FOR ALL PAINTINGS AND DRAWINGS BY MODE AND SES

	Mode								
SES	1	2	3	4	5	6	7	8	Mean
High	3.01	2.81	2.61	2.29	2.46	2.90	2.95	2.66	2.736
Middle	2.85	000	2.44	000	2.57	000	2.74	2.70	2.674
Low	2.61	2.52	000	2.14	2.67	2.57	2.60	2.51	2.498
Mean	2.831	2.724	2.509	2.204	2.577	2.717	2.766	2.621	

Main Effect of Mode: $F = 33.64$ $p < .01$

Main Effect of SES: $F = 32.35$ $p < .01$

Interaction Effect of Mode and SES: $F = 3.94$ $p < .01$

Although there was more interest in comparing the full innovative system to the non-system, it was immediately observable that the lowest artistic level of art works was produced in Mode 4 (Art Charts only). In Mode 7 (no Art Charts, Classroom Teacher In-Service Training only) the students produced art works with an artistic level second to Mode 1. In Mode 2 (Art Charts, and Art Consultation only), and in Mode 6 (no Art Charts, Art Consultation only), the students produced art works with the third highest artistic level. The students in both Mode 3 (Art Charts, Classroom Teacher In-Service Training only) and Mode 5 (no Art Charts, Classroom Teacher In-Service Training and Art Consultation) produced art works which scored lower than Mode 8.

It can be observed that the Art Consultants with Art Charts, as in Mode 2, or without Art Charts, as in Mode 6, bring about a relatively high performance on the part of the students. It can also be noted that in the absence of Art Consultation as in Mode 3 and Mode 4, the students produced art products of the lowest artistic level.

The main effect of the SES is significant beyond the .01 level. The mean scores of artistic production by SES show that the students in the high SES schools produced the highest level of art works and that the students in low SES schools produced art works which ranked lowest in the level of artistic merit irrespective of the mode of instruction.

The interaction effect of SES and Mode is significant beyond the .01 level as indicated by the F test. Modes of instruction display different effects upon artistic production by SES but these effects do not fall into an orderly pattern. Six Modes followed the pattern of the main effect of SES. Mode 5 (no Art Charts, Classroom Teacher In-Service Training, and Art Consultation) and Mode 8 (non-system) deviated from this pattern. The interaction of SES with Mode 5 was atypical in that the low SES students' performance was highest and the high SES students' performance was lowest. In Mode 8, the middle SES students scored higher than the high SES students and the low SES students scored lowest. The middle and high SES students in Mode 1 produced paintings and drawings of the highest artistic merit within their respective SES levels. Mode 8 (non-system) and Mode 5 (no Art Charts, Classroom Teacher In-Service Training, and Art Consultation) produced the widest variations in scores of artistic production among the SES categories.

In sum, while Mode 1 tends to contain the highest level of artistic production, it does not for the lowest SES group. The low SES students respond to the Modes of instruction with the lowest level of excellence in artistic production and least linearly in regard to gradations of completeness of the art instruction innovations.

Table 3.2 compares all SES and Time periods giving an overview of two major variables of the research. The main effect of SES is significant beyond the .01 level as indicated by the F test factor. The scores of artistic production for all Time periods are lower in the low SES schools, higher in the middle schools, and highest in the high SES schools.

TABLE 3.2

MEAN ARTISTIC LEVEL FOR ALL PAINTINGS AND DRAWINGS BY SES AND TIME

	Time Variable Weeks of Instruction				
	1	2	3	4	
SES					Mean
High	2.72	2.65	2.82	2.76	2.736
Middle	2.63	2.63	2.70	2.73	2.673
Low	2.39	2.55	2.59	2.46	2.499
Mean	2.580	2.610	2.704	2.658	

Main Effect of SES: F = 36.21 $p < .01$

Main Effect of Time: F = 5.24 $p < .01$

Interaction Effect of SES and Time: F = 1.95 $p <$ NS

The main effect of Time is significant beyond the .01 as indicated by the F test factor. There tends to be an increase in the artistic level of art production with the increase in the amount of time spent on instruction irrespective of socio-economic status. The level of artistic production is higher at the fourth period than at the first period. It rises during the second time period, tends to peak at the third period, and declines slightly during the fourth period. There is no significant interaction effect of SES and Time on the quality of the art works produced....according to the F test. The duration of instruction has the same effect irrespective of SES.

Table 3.3 compares all Time periods and Modes simultaneously, giving an overview of two major variables of the research. Again, as shown in Table 3.2, the main effect of Time is significant to the .01 level as indicated by the F test.

The main effect of Mode is significant to the .01 level as indicated by the F test. Irrespective of Time, Mode 1 (the full, innovative system) is more effective than Mode 8 (the non-system). In fact, Mode 1 (the full, innovative system) scores higher than any of the other Modes. Mode 4 (Art Charts only) scores lowest. There is a gradual decline of the scores of the art products from Mode 1 to Mode 4. Mode 2 (Art Charts, Art Consultation only) and Mode 6 (no Art Charts, Art Consultation only) and Mode 7 (no Art Charts, Classroom Teacher In-Service Training only) all score at a level slightly below that of Mode 1. It can be observed that the Art Charts alone are not effective and that a thorough in-service training in their use is necessary for the Classroom Teacher and the Art Consultant.

The Interaction Effect of Mode and Time is significant beyond the .01 level as indicated by the F test. The artistic level for all paintings and drawings fluctuates differentially by Mode through the Time periods. There is differential effect of Mode of instruction and duration of instruction on the art production. In Mode 1 (full,

TABLE 3.3

MEAN ARTISTIC LEVEL FOR ALL PAINTINGS AND DRAWINGS BY MODE AND TIME

	Mode								
	1	2	3	4	5	6	7	8	
Time									Mean
Two Weeks of Instruction	2.67	2.87	2.81	2.17	2.41	2.56	2.79	2.44	2.580
Four Weeks of Instruction	2.64	2.75	2.54	2.24	2.70	2.46	3.10	2.52	2.610
Six Weeks of Instruction	3.04	2.62	2.47	2.31	2.39	3.01	2.58	2.80	2.704
Eight Weeks of Instruction	2.98	2.64	2.30	2.09	2.82	2.83	2.59	2.72	2.658
Mean	2.831	2.724	2.509	2.204	2.577	2.717	2.766	2.621	

Main Effect of Mode: $F = 34.76 \quad p < .01$

Main Effect of Time: $F = 5.55 \quad p < .01$

Interaction Effect of Mode and Time: $F = 8.64 \quad p < .01$

innovative system), Mode 5 (no Art Charts, Classroom Teacher In-Service Training, and Art Consultation), Mode 6 (no Art Charts, Art Consultation only), and Mode 8 (non-system), the artistic level of the art works is higher during the fourth Time period than during the first Time period.

Table 3.4 compares two major variables of the research - Mode and SES - for drawings only. The main effect of Mode is significant beyond the .01 level as indicated by the F test. In Mode 1 (the full, innovative system), the students produced drawings with the highest artistic level. In Mode 4 (Art Charts only), the students produced drawings with the lowest artistic level. In Mode 7 (no Art Charts, Classroom Teacher In-Service Training only), the students produced drawings with the second highest artistic level. There was a gradual decline in the artistic level for drawings from Mode 1 (full, innovative system) to Mode 4 (Art Charts only). The artistic level of the drawings in Modes 5, 6, 7, and 8, all of which are partial systems with no Art Charts, show scores which follow an irregular pattern. Also, the scores for these Modes all fall between the highest score of Mode 1 and the lowest score of Mode 4.

The Interaction Effect of Mode and SES is significant beyond .01 level as indicated by the F test. Modes of instruction display different effects upon artistic production and these effects fall into an orderly pattern. The low SES students produced drawings that scored lowest in artistic merit in all Modes. The high SES students

TABLE 3.4

MEAN ARTISTIC LEVEL OF ALL DRAWINGS BY MODE AND SES

	Mode								
	1	2	3	4	5	6	7	8	
SES									Mean
High	3.40	2.97	2.85	2.35	2.57	3.13	3.20	2.87	2.944
Middle	2.96	000	2.48	000	2.76	000	2.86	2.77	2.779
Low	2.71	2.47	000	2.08	2.49	2.75	2.79	2.64	2.697
Mean	3.005	2.812	2.643	2.200	2.597	2.924	2.948	2.758	

Main Effect of Mode: F = 42.58 p $< .01$

Main Effect of SES: F = 24.03 p $< .01$

Interaction Effect of Mode and SES: F = 2.57 p $< .01$

produced drawings that scored highest in artistic merit in all Modes with the exception of Mode 5. The middle SES school students produced drawings that scored between the low SES and high SES students in all Modes except Mode 5 (no Art Charts, Classroom Teacher In-Service Training, and Art Consultation) in which they scored higher than the high SES students.

Table 3.5 compares two major variables of the research - SES and Time - for drawings only. The Main Effect of SES is significant beyond the .01 level as indicated by the F test. The mean scores of SES are lower in the low SES schools, higher in the middle SES schools, and highest in the high SES schools. The Main Effect of Time on the artistic level of the drawings is not significant.

TABLE 3.5

MEAN ARTISTIC LEVEL OF ALL DRAWINGS BY SES AND TIME

	Time				
	Two Weeks of Instruction	Four Weeks of Instruction	Six Weeks of Instruction	Eight Weeks of Instruction	
SES					Mean
High	3.02	2.96	2.96	2.87	2.941
Middle	2.72	2.56	2.78	2.93	2.780
Low	2.52	2.74	2.62	2.45	2.560
Mean	2.828	2.786	2.769	2.726	

Main Effect of SES: $F = 36.38 \quad p < .01$

Main Effect of Time: $F = 0.69 \quad p <$ NS

Interaction Effect of SES and Time: $F = 3.67 \quad p < .01$

The duration of instruction does not seem to make a difference in the artistic level of drawings. The Interaction Effect of SES and Time on the artistic level of the drawings is significant beyond the .01 level as indicated by the F test.

The low SES students achieved their highest artistic level of drawings when instruction was presented for four weeks; their lowest level of drawings were produced in the eight week period. The effect of Time on the low SES students produces a curvilinear pattern, that is, it starts low, increases, and then declines to a point below the first Time period. The middle SES students reached their highest artistic level of drawings when given eight weeks of instruction; their lowest artistic level of drawings were produced when given four weeks of instruction. The effect of Time on the middle SES students produces a curvilinear pattern, in reverse of that of the low SES students; that is, it starts high, sags to a low point, then moves up to a point higher than the first Time period. It is interesting to note that these effects are distinctly opposite. The highest artistic level of drawings produced by each SES occurred at different Time periods.

Attempts to analyze drawings by Mode and Time were hampered because of the scheduling of the production of art works. Tables constructed with Mode and Time as the independent variables were too incomplete for proper analysis.

Table 3.6 compares two major variables of the research - Mode and SES - for paintings only. Under Mode 1 (the full, innovative system), the students produced paintings of the highest artistic level (irrespective of SES). The lowest artistic level of paintings was scored in Mode 4 (Art Charts only). The widest difference in scores for the artistic level of paintings occurs between Mode 1 (full, innovative system) and Mode 4 (Art Charts only). The scores of Modes 5, 6, 7, and 8 remain fairly constant and fall between the highest scores of Mode 1 and Mode 2 and the lowest scores of Mode 3 and Mode 4. The Interaction Effect of Mode and SES is significant beyond the .01 level as indicated by the F test.

TABLE 3.6

MEAN ARTISTIC LEVEL OF ALL PAINTINGS BY MODE AND SES

	Mode								
SES	1	2	3	4	5	6	7	8	Mean
High	2.70	2.65	2.36	2.23	2.34	2.65	2.73	2.45	2.5371
Middle	2.74	000	2.40	000	2.37	000	2.62	2.62	2.5705
Low	2.49	2.59	000	2.18	2.85	2.41	2.38	2.37	2.4296
Mean	2.6600	2.6337	2.3848	2.2010	2.5534	2.5134	2.5857	2.4781	

Main Effect of Mode: $F = 13.04$ $p < .01$

Main Effect of SES: $F = 5.66$ $p < .01$

Interaction Effect of Mode and SES: $F = 5.76$ $p < .01$

TABLE 3.7

MEAN ARTISTIC LEVEL OF ALL PAINTINGS BY SES AND TIME

	Time				
	Two Weeks of Instruction	Four Weeks of Instruction	Six Weeks of Instruction	Eight Weeks of Instruction	
SES					Mean
High	2.53	2.48	2.61	2.58	2.539
Middle	2.59	2.67	2.56	2.38	2.572
Low	2.35	2.49	2.45	2.51	2.429
Mean	2.473	2.530	2.508	2.505	

Main Effect of SES: F = 7.64 $p < .01$

Main Effect of Time: F = 1.21 $p < .01$

Interaction Effect of SES and Time: F = 3.28 $p < .01$

Table 3.7 compares the two major variables of SES and Time for all paintings. The Main Effect of SES is significant beyond the .01 level as indicated by the F test. The low SES students produced paintings of the lowest artistic level; the middle SES students produced paintings of the highest artistic level, and the high SES students produced paintings which ranked below but very close to the highest scores for paintings. The Main Effect of Time is not significant beyond the .01 level as indicated by the F test. The Interaction Effect of SES and Time is significant beyond the .01 level as indicated by the F test.

As in the case with the analyses of drawings, instructional considerations made an adequate analysis of Mode with Time impossible.

In order to determine the effects of the Art Chart Program on the specific dimensions of the art works, a series of analyses were performed with each dimension of the drawings and paintings as the dependent variable. Appendix H contains the tables showing the analyses of the various dimensions and the results of the analyses of variance.

On all of the analyses of the specific dimensions of drawings, SES was significant ($p < .01$). In each case, low SES children produced the lowest scores, middle SES children produced moderate scores, and high SES children produced the highest scores. With regard to the dimensions of LINE, SHAPE, and TEXTURE-PATTERN, Mode of instruction was found to be significant ($p < .01$). Time, as an independent variable, was the least consistent variable. Time was significant at the .05 level for LINE; it was not significant for SHAPE; but it was significant at the .01 level for TEXTURE-PATTERN.

Comparable analyses were performed on the specific dimensions of the paintings. SES was not as consistently significant with the paintings as it was with the drawings. On the COLOR dimension, SES was not significant. On the other three dimensions, LINE, SHAPE, and TEXTURE-PATTERN, SES was significant but the consistent pattern of low SES - low artistic level, middle SES - moderate artistic level, and high SES - high artistic level was not obtained. The order of the middle and high SES on SHAPE and TEXTURE-PATTERN was interchanged. Mode of instruction was significant for all dimensions. Length of instruction was significant on only one dimension, SHAPE.

A constantly recurring consideration in the understanding of the preceding data is the question of the effects of the largely uncontrollable variables of individual teacher effect upon the level of art production. Table 3.8 constitutes a partial test of the degree to which significant differences among Modes of instruction and SES of children may be confounded by the effects of the teacher.

Two one by thirty analyses of variance were conducted with teachers as the independent variable in both cases and mean for drawings as the dependent variable for one analysis and mean for paintings as the dependent variable for the other analysis. Both were significant at the .001 level. Since, in most instances there was only one randomly assigned teacher to a given combination of Mode and SES, it was certain that part of this significant F was attributable to the already noted significant differences among Modes and SES. In several instances, however, there was more than one teacher in a given combination of Mode and SES. For paintings and drawings, a special form of the t test* was used to test the differences among all possible means within both analyses of variance. In Table 3.8 these means obtained under the same Mode and SES are compared. For paintings, one-half of the teachers teaching under the same Modes to children of the same SES, had children's art scores significantly

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$$* \; t = \frac{m_1 - m_2}{\sqrt{MS\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

TABLE 3.8

COMPARISON OF MEAN ART SCORES OF STUDENTS BY INDIVIDUAL TEACHER UNDER THE SAME TEACHING MODE AND SES

		Painting		Drawing	
Mode and SES	Teacher	$\bar{X}$	P	$\bar{X}$	P
Mode 1 and Inner School	4	2.41	NS	2.65	NS
	5	2.56		2.72	
Mode 1 and Middle School	1	2.65	.05	2.89	NS
	2	2.83		3.03	
Mode 1 and Outer School	3	2.49	.01	2.99	NS
	6	2.83		3.56	
Mode 2 and Outer School	7	2.71	NS	3.01	NS
	8	2.58		2.92	
Mode 3 and Middle School	11	2.47	NS	2.56	NS
	12	2.34		2.31	
Mode 4 and Inner School	13	2.26	NS	2.13	NS
	15	2.23		2.03	
Mode 6 and Inner School	19	2.66	.01	3.13	.01
	20	2.12		2.28	
Mode 8 and Inner School	25	2.40	NS	2.78	NS
	28	2.34		2.52	
Mode 8 and Middle School	26	2.06	.01	2.97	.01
	27	2.46		2.62	
Mode 8 and Outer School	29	2.35	.05	2.86	NS
	30	2.60		2.86	

different from one another. For drawings, only two of the ten sets of teachers under these circumstances had students produce art work of significantly different mean assessments. Three of the comparisons for paintings and drawings are made for Mode 8, the spontaneous and unstructured instruction. This means that only the effect of common SES should inhibit individual teacher differences if they exist. Indeed, for painting and drawing combined, three of the seven significant differences are found in Mode 8. In two of the inner schools, there was significant differences among teachers. The greatest frequency of teacher differences occurred in the middle schools.

In a comparison of significant mean differences among teachers in general and those teaching under the same Mode and SES circumstances, 56% of all comparisons of means are different, while 50% of comparisons (5 of 10) are significant in Table 3.8 for painting. Therefore, for the comparisons we were able to make for paintings, the possibility is strong that teacher differences have affected the Mode and SES comparisons made throughout the analyses. For drawings, on the other hand, only 20% of the comparisons made between teachers teaching under the same conditions were significantly different, but for all comparisons of teachers for drawings, 56% were significantly different. The chances of individual teacher differences for drawings influencing our analysis of Mode and SES is, by this limited test, slight.

TABLE 3.9

COMPARISON OF MEAN ART SCORES OF STUDENTS BY TEACHER DEGREE AND EXPERIENCE AND ART CONSULTANT EXPERIENCE

Variable:	Drawings		Paintings	
	t	p	t	p
Teachers				
Degree, BA or less vs. MA or more	-1.667	.05	-0.089	NS
Experience Out - Years (0 vs. 1 or more)	-3.657	.0005	-3.132	.005
Experience In - Years (5 or less vs. 6+)	-3.019	.005	-1.227	NS
Total Experience - Years (9 or less vs. 10+)	-3.359	.0005	-1.330	NS
Art Consultants				
Experience Out - Years (0 vs. 2+)	1.362	NS	3.308	.005
Experience In - Years (3 or less vs. 4+)	-2.317	.05	1.346	NS
Total Experience - Years (3 or less vs. 5+)	1.622	NS	3.560	.0005

Table 3.9 compares the mean art scores of students by teacher degree and experience and art consultant experience. For the teachers, some of the differences of children's scores in drawing are associated with the academic degree the teacher holds and the amount of teaching experience. For the consultants, some of the differences of children's scores in drawing have been associated with the amount of teaching experience. Since these variables were randomly distributed over SES and Mode, it is unlikely that the differences seen in Table   account for the consistently significant differences by Mode and SES but rather constitute an additional variable in the instruction of art that is not affected by the introduction of an innovative method of art instruction.

Summary Observations: An Overview of Consistencies Seen Throughout the Tables

In summarizing the data as discussed and analyzed in the preceding tables, it might be well to recall the basic conditions and assumptions of this research. Primarily, the research was designed to assess the impact of a systematic program of art instruction on the art production of kindergarten children. The research sought to test the proposition that art educators using a system of instruction can provide the young child with art experiences that will increase his visual discrimination and perceptual development as measured by excellence of art productions. The full system focused the attention of the child on the visual aspects of his environment and helped him to use the enriched art information gained.

Tables 3.1, 3.4, and 3.9 present the overall aspects of the total research. It is immediately obvious that Mode does make a difference in art production and that Socio-economic Status also makes a difference. Mode 1, which is the full innovative system, when compared within each SES, always scores higher than Mode 8, which is the non-system. It can be observed that the difference between Mode 1 and Mode 8 in the low SES schools is much smaller than in the high SES schools. This would imply that the innovative program was more successful in the high SES schools than in either the low SES or the middle SES schools. However, in spite of the fact that scores in the low SES schools did not show great variation, it can be observed that Mode 1 still has higher scores than Mode 8. The spread of scores in high SES schools is greater, ranging from a mean score of 2.2 to a high of 3.4. The spread of scores in the low SES schools was small, ranging from 2.1 to a high of 2.7. There may be a clue here as to the type of intensive instruction needed in the low SES schools.

As soon as any part of the full innovative system was withdrawn, unpredictable things happened. For instance, Mode 4, which was a partial system using the Art Charts, but did not include in-service training for the classroom teacher nor art consultant help, always scored lower than any other mode. The classroom teachers using Mode 4 did have the written instructions which accompanied the Art Charts, but they were never told how to use the charts, nor how to use the instruction. In fact, their art consultant help was withdrawn during the two-week periods when they were using the visual art charts. The teachers assigned to Mode 8 were not given any visual materials or personnel help. They simply received art supplies and were asked to do a specific task as a culminating activity. Mode 8, in which kindergarten teachers taught art spontaneously, always scored higher than Mode 4.

Also, it is interesting to compare Mode 3 and Mode 7. Both of these Modes stressed in-service training for the classroom teacher. Mode 3 had the Art Charts and Mode 7 did not, neither had art consultant help. Mode 3, which used the Art Charts scored low--just above Mode 4, which was the lowest. Mode 7 scored consistently higher than Mode 3.

A summary of the Modes of instruction as they ranked in excellence of art production in paintings is shown in Figure 3.1, below. Modes 1, 2, 5, and 6 had art consultant help.

FIGURE 3.1

RANKING OF THE EIGHT MODES ON OVERALL PAINTING MEANS AND MEANS OF SPECIFIC DIMENSIONS

Modes Ranked for Overall Painting	Modes Ranked for Dimensions			
	Line	Shape	Texture-Pattern	Color
1	5	7	2	1
2	6	6	1	2
7	2	1	8	7
5	7	2	6	5
6	8	5	7	8
8	1	3	5	6
3	3	8	3	3
4	4	4	4	4

While the full system (Mode 1) ranked highest overall, it did vary in the specific dimensions of painting. In LINE particularly, it was not an effective Mode of instruction. Mode 4, however, was consistently inferior as a Mode of instruction. We will discuss some conclusions to be drawn from this array of data in the final chapter.

The data are similarly presented for drawings in Figure 3.2.

FIGURE 3.2

RANKING OF THE EIGHT MODES OF AN OVERALL DRAWING MEANS AND MEANS OF SPECIFIC DIMENSIONS

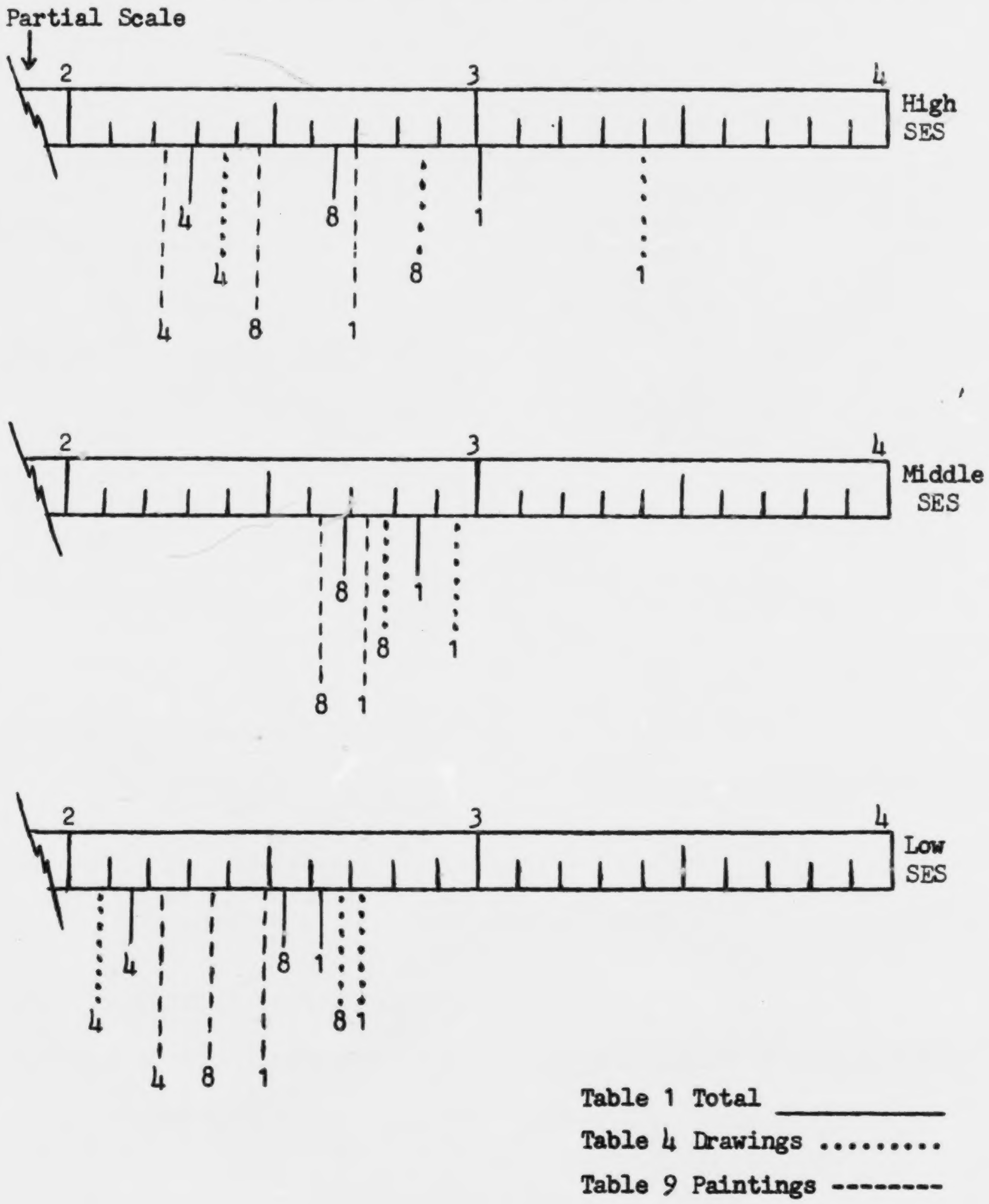
Modes Ranked for Overall Drawing	Modes Ranked for Dimensions		
	Line	Shape	Texture-Pattern
1	7	1	1
7	1	6	6
6	6	7	7
2	2	2	2
8	8	8	8
3	5	3	3
5	3	5	5
4	4	4	4

The data for drawings are in general agreement with those for paintings, but are more consistent among dimensions and between the dimensions and the overall evaluations.

Duration of instruction is not a significant variable in the excellence of art production. While it was significant in some few comparisons, the progression of means were not linear through the

FIGURE 3.3

DIFFERENCES IN THE MEAN SCORES OF ART PRODUCTION FOR MODES 1, 4, AND 8 FOR TOTAL ART PRODUCTION, PAINTINGS AND DRAWINGS, PRESENTED ON A FOUR POINT SCALE FOR LOW, MIDDLE, AND HIGH SES CHILDREN



Time periods and inversions were frequent. Given the number of tests of significance performed and the levels of significance obtained for the Time variable, the variations of means by Time could be a function of chance.

The consistency of the data for SES need no summary tables or equivocation. In virtually every Mode of instruction in every dimension, the mean judged excellence of the low SES school children were lowest and the high SES school children highest.

A final consideration in the summary of the findings is needed. While increments in the excellence of art production (particularly by comparing the means for Mode 1, full system, and Mode 8, no system) can be found statistically significant, the question of the heuristic significance of the increment remains. Would a small gain, while significant at the .01 level, be worth the introduction of a new system of art education throughout a school system? Figure 3.3 presents the data bearing on this question.

These comparisons, for the high SES children, show that the difference between the spontaneous teaching of art (Mode 8) and the full, innovative system (Mode 1) are appreciable compared to the total scale of measurement. Differences between Modes 1 and 8 among the high SES children ranged from 11 to 20 percent. In other words, paintings were judged 11 percent better, drawings 20 percent better, and total art production means 14 percent better, when high SES children produced art works after Mode 1 instruction as opposed to Mode 8 instruction. For middle SES children, however, the differences were only 5 or 6 percent, while for lower SES children the increase of Mode 1 over Mode 8 is a constant 3 percent over paintings, drawings, and total art production.

If Mode 1 is compared to Mode 4 (instruction with charts only), which consistently yielded the lowest art scores, the differences are much greater. It should be noted that, while Mode 4 is not a logical antithesis to Mode 1 (in the sense that Mode 8 is), it might be used if art educators assumed that visual art resources such as the Art Charts were so powerfully instructive in and of themselves that their presence alone would improve art instruction. Examination of Figure 3.3 shows lower SES children 7 percent better for paintings, 20 percent better for drawings, and 4 percent better overall when Mode 1 is used over Mode 4. For the high SES children, the differences range from 16 percent for paintings through 27 percent overall to 34 percent for drawings with Mode 1 yielding the high scores.

The comparison of Mode 1 with Mode 8 shows that, especially for learning differences, large heuristic advances were made for high SES students*.

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* Middle SES students could not be compared between Modes 1 and 4.

CONCLUSIONS

Serendipitous Findings

In the process of conducting the research, the investigators gathered information formally unplanned but relevant to the research. The observed though unmeasured variation in teacher enthusiasm in the use of the charts, in the instruction between consultants and teachers, and in the teacher in-service was independent of the Mode of instruction. It is possible that these variables affected some student art production outcomes. This is particularly possible when considering the effects of Modes 2, 3, 5, 6, and 7 which were irregular in regard to each other and logically difficult to explain. These Modes were "partial system modes" and the pattern of differences among them (particularly the high art scores of Mode 7) may have been affected by this observed enthusiasm - cooperation differential. The findings for Modes 1, 8, and 4 seem little affected by this. The question remains, however, of the effect of this variable if the full, innovative system of art instruction was to be made standard throughout the school system. Since kindergarten teachers are hired and evaluated on the basis of a variety of factors, only one of which is their attitude and proclivity toward teaching art, it is mandatory that any system of instruction claimed to be superior be a system which can be implemented given teacher variation. At least in experimental form, Mode 1 seems to yield little inter-teacher variation when compared to the partial systems (Mode 4) and non-system (Mode 8).

Investigator observation also led to a subjective assessment of the Art Chart usage in different kindergarten classrooms. The display of the Charts depended on the physical environment of the classroom. In some classrooms, they were seen to be prominent and harmonious with other visual properties of the classroom, in others, not. Therefore, the implementation of the Art Charts in the first four Modes was not a constant. If Charts were to be used in a system of art education, an effective and standardized form of Art Chart display should be developed.

Discussion with the teachers in Modes 1 to 4 also revealed the possibility of integrating art education with other learning areas. Concept and vocabulary development such as "up and down", "right and left", "thick and thin", "vertical", "horizontal", "diagonal", "crooked", and "bunching" were derived from LINE Charts. SHAPE Charts stimulated math concepts of the division of shapes into fractions or components. TEXTURE-PATTERN Charts seemed to increase the students' grasp of detail with the resultant speculation that reading skills benefit from art instruction with Art Charts. These impressions, provided by the research, point the way toward other rigorous researches in this area.

Finally, several classroom teachers maintained that the art productions, the dependent variable, did not completely reveal the extent and content of the child's art learnings in art. It is possible that there were additional perceptual and aesthetic learnings which might have been revealed by measurements other than that of art production.

General Conclusions

The first conclusion drawn from this research, and one that has strong implications for future art education research, is that it is possible to develop a reliable measurement of art production. If the criteria for art production are articulated, judges can evaluate art works in a structured, quantified manner. Experience with the development of protocols for evaluating art production of kindergarten students suggests that art works produced by older students can be similarly quantified and used in a wide variety of research.

Variations in the findings between drawings and paintings indicate that a single method of instruction for both may produce different results. Paintings scores were more variable with regard to the dimensions measured, the Modes of instruction, and (to a lesser extent) the SES of the children instructed. One possible interpretation of this finding is that painting and drawing are different artistic processes calling for different perceptual, aesthetic, and kinetic skills. That the teaching of art may not be unidimensional should be taken into account in the revision of existing modes of instruction or the development of new instructional programs.

Another conclusion is that the presentation of visual stimuli in the form of Art Charts without other components of In-Service

Training and Art Consultation is not productive of good art learning for kindergarten students. Mode 4 (Art Charts only) was initially thought of as an intermediate stage between full system and non-system. The evidence is clear, however, that the Art Charts alone were the least effective Mode. The Art Charts without clear understanding of their use may produce a kind of intrusive but unmeaningful stimulus.

It is also clear that the Art Consultant is effective in implementing good art education. Three of the top four Modes have Art Consultant services. Although Art Consultants frequently are frustrated about the great numbers of different classrooms they must serve, their presence does seem to make a difference in the perceptual development of children as reflected by their art production.

The Art Charts appear to be more effective with Art Consultants than with teachers. The Art Charts may have had more utility with the art-trained person. The visual stimuli provided by the Charts complimented their art training and thus their art teaching was concentrated on a specific art concept. It may be damaging to use Art Charts with a classroom teacher when his background is not art-oriented. Brief periods of in-service training may not be sufficient to overcome years of lack of art training. Such brief training might tend to confuse teachers and create tension in the classroom teacher, thus inhibiting his normal teaching behavior. In contrast, the Art Consultant has had art training and can call on this background to focus his instruction.

As might be expected, the formal training and experience of the kindergarten teacher and the Art Consultant also make a difference. In most school systems, this variability is only marginally controllable; therefore, the task of the art educator is to devise methods of instruction that are successful, given the differences (which may be considerable) in training and ability of those responsible for art instruction. The most important conclusion is that the full, innovative system seems to have achieved this goal. We can say with considerable certainty that the full system, Mode 1, is consistently associated with art production superior to that of spontaneous teacher art instruction under all circumstances tested. It is possible to provide a system to increase the ability of kindergarten students to produce art which is perceptually sophisticated. We also have the ability to understand in some detail the relative importance of the constituent parts of the Modes of instruction to the production of art. As the system of instruction is comprised, there is no short cut to teaching art in kindergarten: all components must be included. This knowledge allows us to alter the content of components or add other components (such as filmed visual aids) from a base of knowledge.

Finally, it is clear that the Mode of instruction found most effective in this study does not provide sufficient increment for low SES children to warrant the initiation of Mode 1 instruction in the inner city schools. A new and different method of teaching art to low

SES children must be developed. While the possibility exists that the defined goals of early art education are infused with middle class values, thus artificially handicapping the lower SES child, the fact remains that these are the standards cumulatively maintained through the educational process and upon which the success of children is judged. This research points strongly to need for investigation of whatever method of instruction is developed for the lower SES children. Common-sense assumptions about what might be useful for the art education of low SES children are inadequate. The inadequacy is exemplified in this research, since Mode 1 was initially envisioned as particularly appropriate for the needs of lower SES children. The research procedures, the technique of measuring results, and the basic design are available for the needed research.

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McFee, June King, Preparation for Art. Wadsworth Publishing Co., Inc., San Francisco, Cal., 1961

Arnheim, Rudolph A., Art and Visual Perception: A Psychology of the Creative Eye. University of California Press, Berkley and Los Angeles, 1960

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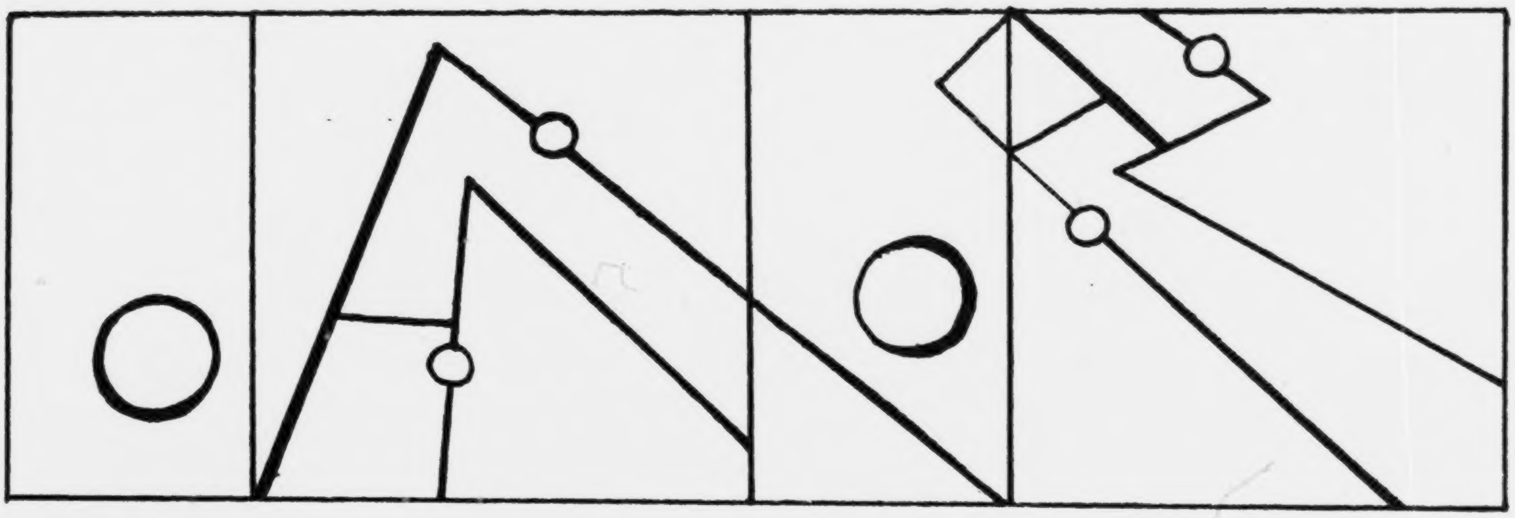
APPENDIX A

Art Charts

COLOR SET

done on heavy mat board 28" square
smaller panels 14" x 28"

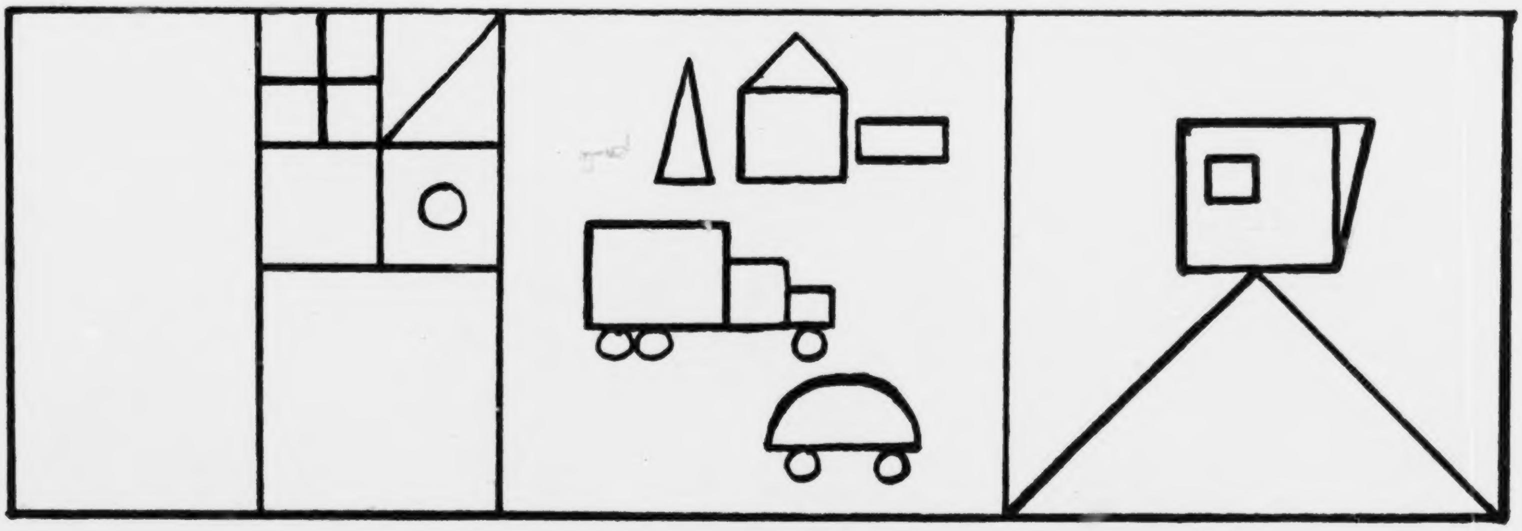


Red purple
Reds
Oranges
Yellows

SHAPE SET

panels 28" square

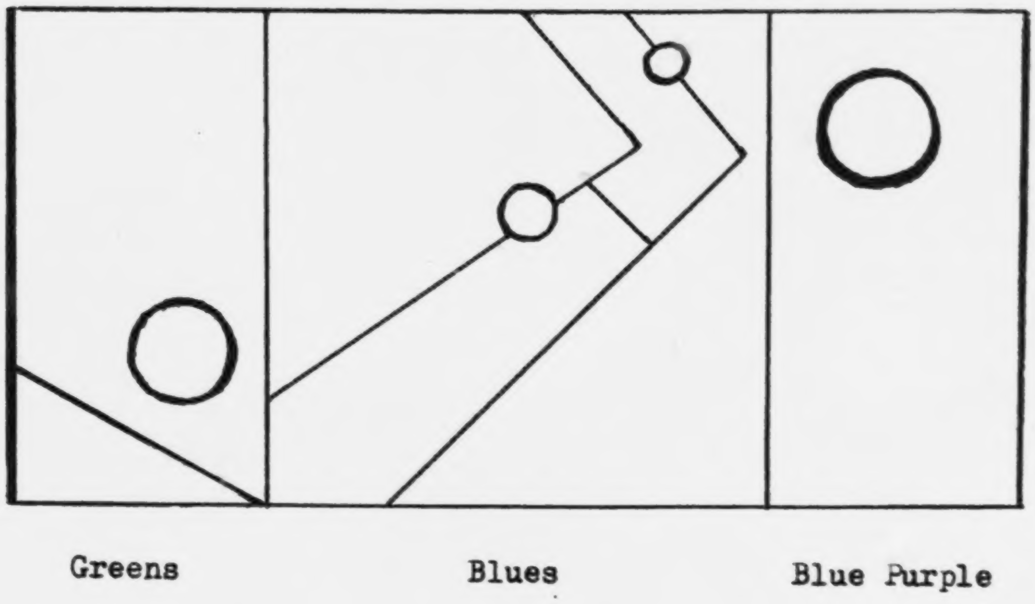
heavy mat board
red flannel over Celotex
heavy mat board

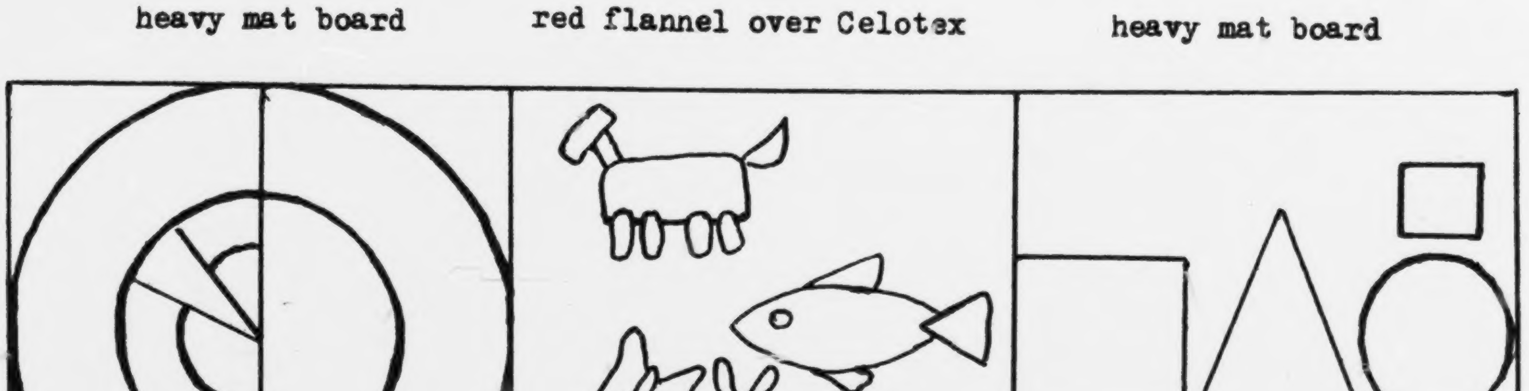


Squares and divisions of squares

Movable geometric shaped felts in many colors

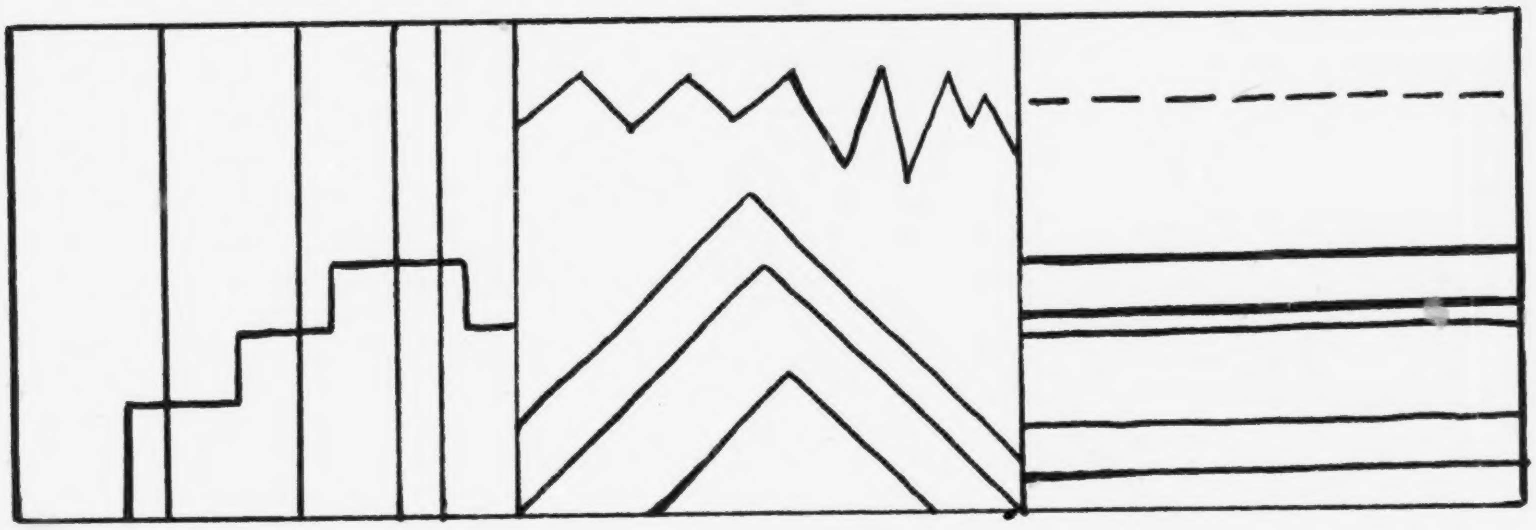
Triangles and Squares


Greens
Blues
Blue Purple


heavy mat board
red flannel over Celotex
heavy mat board

LINE SET

done on heavy mat board 28" square in bright colors

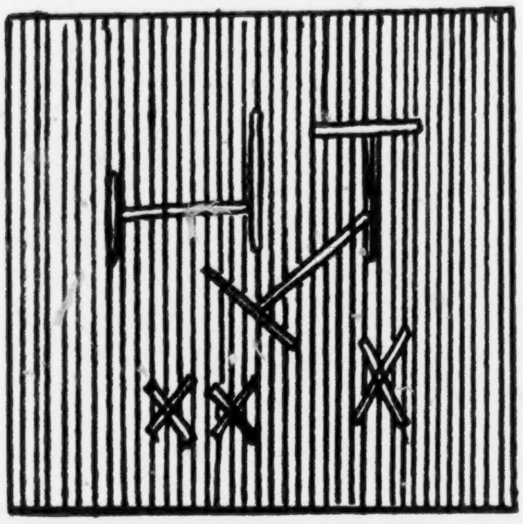


Vertical

Slanting or diagonal

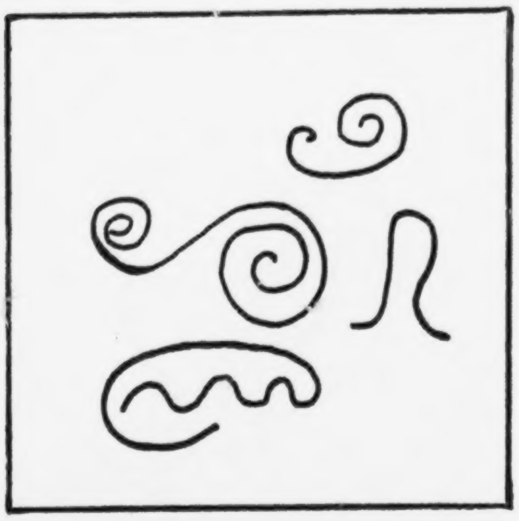
Horizontal

Line in materials

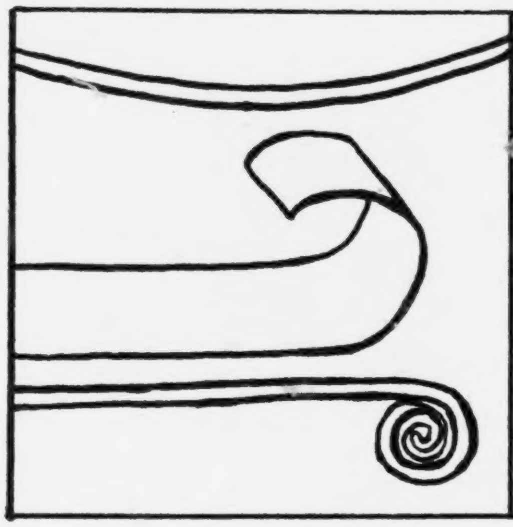


Red and white striped
flannel on 28" square Celotex

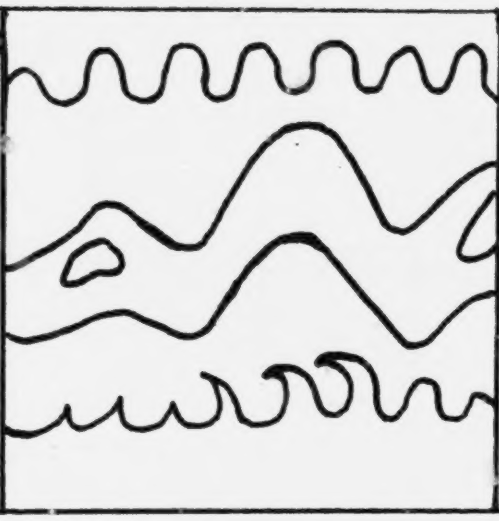
Felt strips and roving pieces may be manipulated by the children.



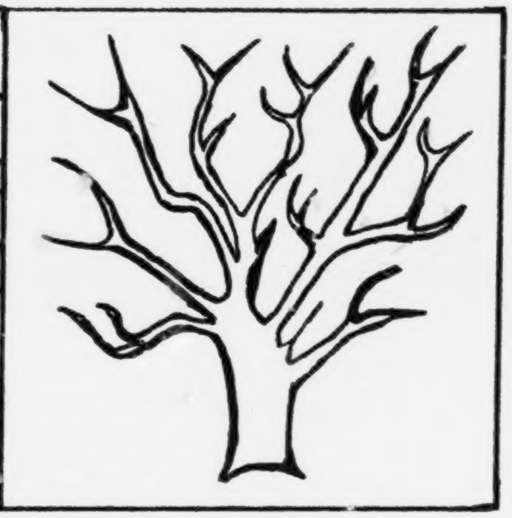
Red flannel on 28" square
Celotex



Curving



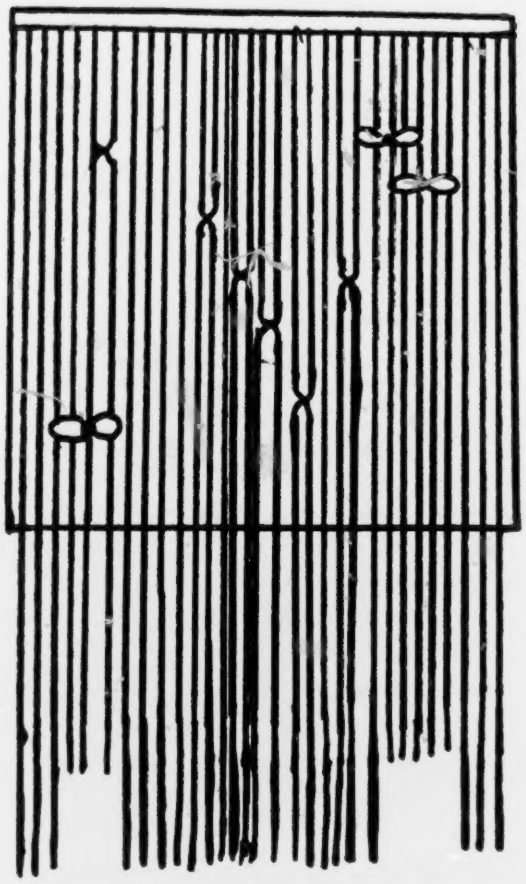
Crooked



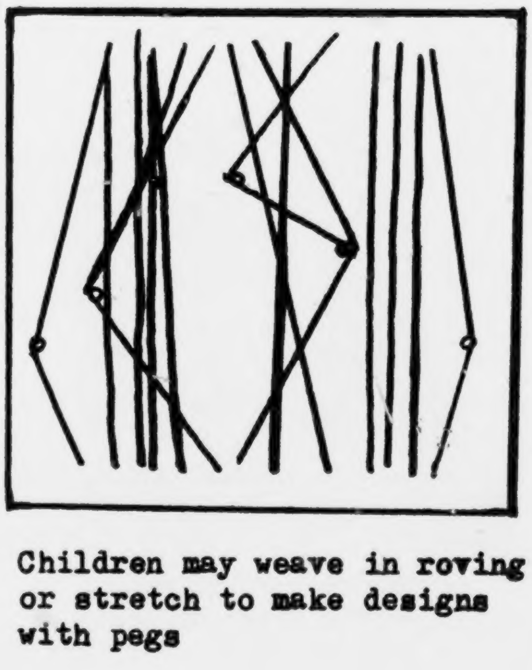
Branching

Roving yarns hanging
from 28" square pegboard

Black elastic strings
strung on white pegboard



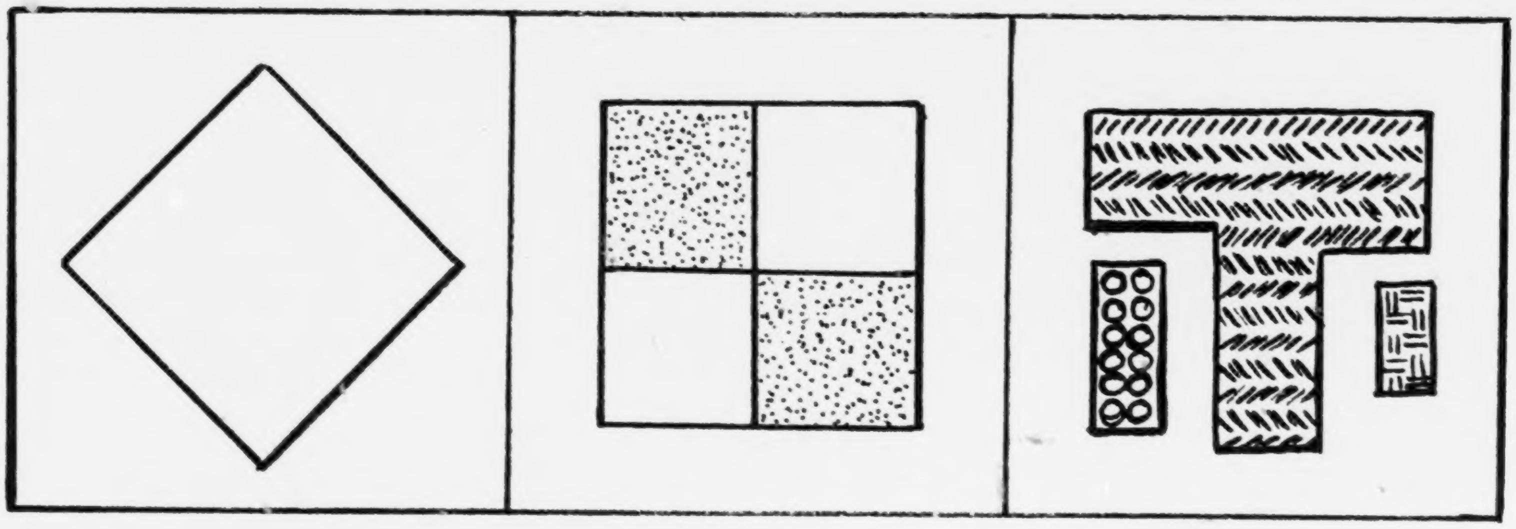
Roving may be tied and
looped to make designs.



Children may weave in roving
or stretch to make designs
with pegs

TEXTURE SET

done on heavy mat board 28" square in bright colors

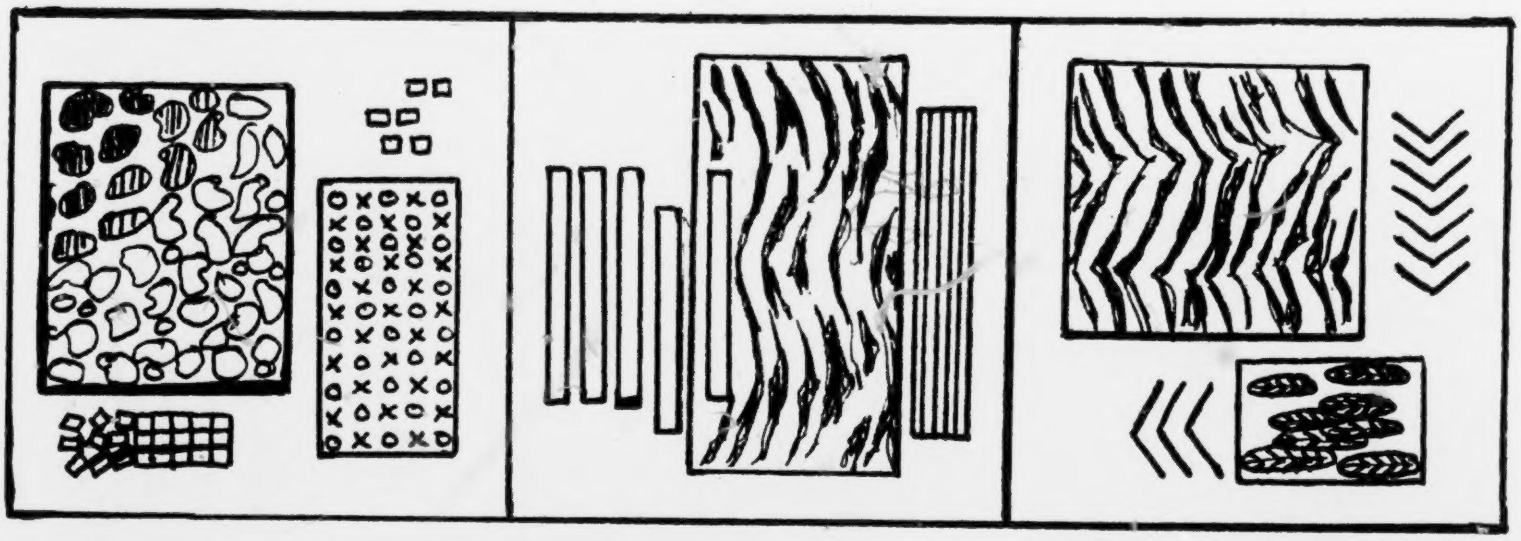


Smooth foil paper

Rough
Rough sand paper
Fine sand paper

Bumpy
Egg cartons
Sponge rubber
Rug underlays

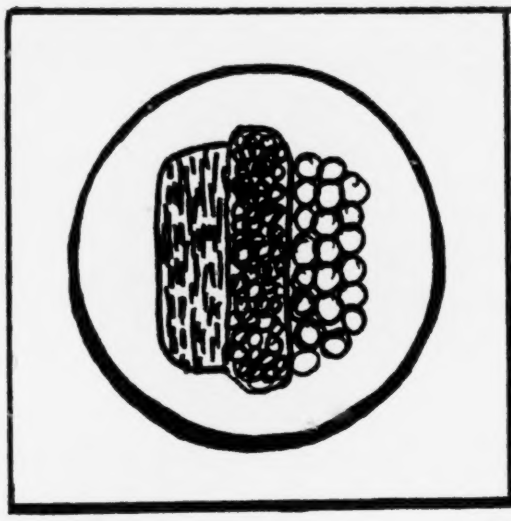
PATTERN SET



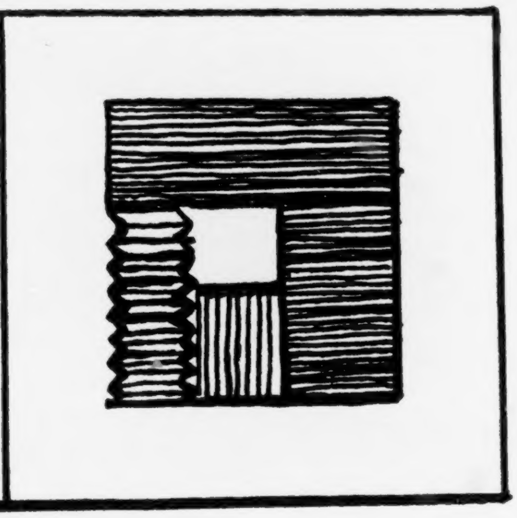
Spots
Even and irregular
Spotted pile fabric

Stripes
Tiger striped pile
Fabric
Satin striped fabric

Chevron
Zebra striped pile
Fabric
Leaf design on silk fabric



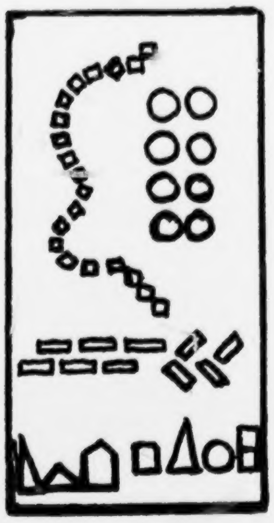
Soft
Mink fur
Persian lamb
Soft cotton



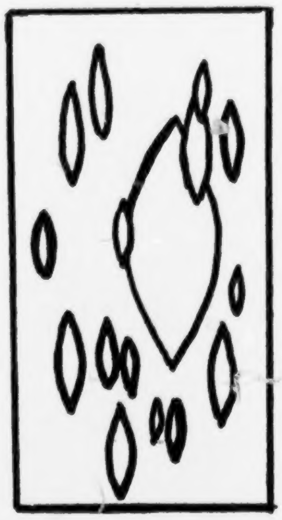
Ribby
Pleated paper
Striated shingle
Corduroy
Drinking straws

PATTERN ORGANIZATION

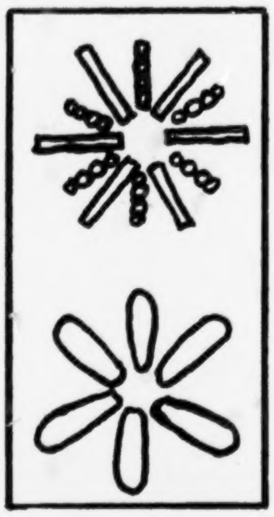
heavy mat board 14" x 28"



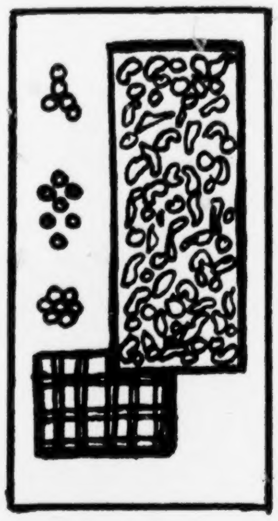
Shapes in rows



Shapes touching and overlapping



Radial pattern



Spot and plaid pattern

APPENDIX B

Suggested Art Instruction Manual

Grand Rapids Public Schools
Art Department

TALK ABOUT COLOR

Name the colors.

Which colors are light? dark? bright? pale? intense? faded? big and little areas?

What is a dull color? (brown, tan, gray)

Which colors show up best next to each other? (the complements)

Which colors "blend" together?

What colors seem to be of a family? (have strips of paper to show)

What color is this? a nickle, a penny, a rock, sand, things of "undecided" colors: wood, your skin, your hair.

What color do you like best?

SUGGESTED ART INSTRUCTION TO BE USED IN CONNECTION WITH COLOR CHARTS

Color Kindergarten

Talk about color (see suggestions on separate sheet).

Paint to ENJOY COLOR. Use big brushes and poster paint; orange, red, yellow, green, blue, purple.

Show film "Hailstones and Halibut Bones".

Make an arrangement with colored cut paper on colored paper one day, decorate with poster paint the next day. What is the difference between painted colors and cut paper colors?

Use crayon -- try different ways of using it, on side, overlap to show how many new colors you can make.

Paint with sponge -- overlapping.

Use fingerpaint -- mixing colors.

Use colored chalks with wet newsprint to show the brilliance of color.

Mix paints: Use black and white powder with two colors only -- either watercolor or poster paint.

Mix transparents, liquids, plastic or cellophane.

Make a mural divided into colors, each section would have a feeling, only one color per section.

Use reproductions to discuss how artists use color. Why do artists like certain colors? Choose your three favorite colors and make a painting.

TALK ABOUT SHAPES

Name the shapes on the chart.

Notice different sizes of shapes on the chart.

LOOK AROUND

What things are square shapes in the room? Cube? Rectangular?

What things are round shapes in the room? Cylinder? Sphere (ball)? Cone? Oval? Egg?

Are there triangular shapes in the room? Pyramid? Look for diagonal lines which form edges of a triangle.

What other shapes do you find? Can you distinguish between geometric and free form shapes?

Trees - Cylinder of trunk and branches. (awareness of flat vs. 3-d shapes) Cone; oval; round of foliage; round, curvy, pointed leaves.

Flowers - Squarish; pointed; curvy. (note arrangement of shapes)

Birds - Streamline bodies (or rounded); angular or 1/2 circle wings (note relationship between geometric and nature shapes)

Fish - Streamline. Rounded or angular fins. (animals, insects and people are made of many shapes put together)

What combinations of shapes do you find?

What geometric shapes do you find outside?

Look for filled-in shapes and outlined shapes.

Shapes Kindergarten and Early Elementary (continued)

Talk about SIMILARITIES. Shapes of wings, leaves, fish and petal are the same or alike. Same kinds of shapes make different things.

Use felt shapes like those on the panels and see what you can make with them.

Make a drawing with INSECT SHAPES. Why not have an insect day! Use crayon on manila to discover what shapes can be used.

Make a painting with FLOWER or PLANT SHAPES. Use water color on newsprint to note how shapes are organized.

Try to cut paper BIRD SHAPES.

Draw a picture about a pet you would like to have. Use paper, 9 x 12 white, primary pencil - showing shapes with a line.

Make 3 dimensional ANIMAL SHAPES in clay. (Emphasize the difference between 2d and 3d)

When you take a walk, encourage them to look at nature forms. Collect things and then look at them through a magnifying glass. Make a painting about shapes that you discover.

SUGGESTED ART INSTRUCTION TO BE USED IN CONNECTION WITH SHAPE CHARTS

Shapes Kindergarten and Early Elementary

Talk about panels: name shapes, color, sizes (big & little)

Talk about combinations of shapes (4 in 1). How smaller shapes combine to make bigger shapes.

Use felt shapes on panels. Try to see that placement and combinations of shapes make rhythm and pattern. Try placing shapes left to right, top to bottom, big and little, big, bigger, biggest.

Make DESIGNS by cutting colored paper shapes - cut basic square into smaller squares, triangles, even circles (paste on 12 x 18 manila) to see relationship of shapes to each other.

Make PICTURES by cutting and arranging colored paper shapes which relate to the child's environment. (Paste on 12 x 18 manila)

Make a DRAWING using shapes (9 x 12 white drawing paper, primary pencils)

CIRCLE DAY. Draw with crayons on manila 12 x 18 about things that you can think of that are round! Or, use a big circle shape and draw in it.

SQUARE DAY. Use poster paint and 18 x 24 newsprint. Think of all the things that are square that you could paint about. Or, paint in a 24 inch square.

TRIANGLE DAY. What fits in this triangular piece of paper? Or, can you make something fit into this triangle? (Use crayon. Use 18 inch square newsprint folded in half diagonally to make the triangle.)

Make a DRAWING. Use crayon on 18 x 24 newsprint.

Make a FEEL BOX with shapes inside; box (square), box (rectangle), orange ball (round), cone cups, etc.

Talk about DIFFERENCE between Straight Line shapes and Curved Line shapes.

TALK ABOUT LINES

(Let the Children Talk)

Lines may be curvy, straight, zig-zag, dotted, broken, up and down, across, branching.

Find LINES in your clothes, stitching, folds, edges.

Find LINES in your hands, in faces.

Find LINES in the room, in cracks, woodgrains.

Look out the window for LINES - in fences, telephone poles, in wires, in houses, in the sidewalk.

Look for LINES in nature - in veins of a leaf, in stems, in shells, in grasses.

Look for LINES in a painting.

Look for LINES around shapes.

Look for LINES as things move.

ENJOY what you SEE.

Talking about lines should be a two-way conversation between the teacher and the children.

Help children develop a "concept" vocabulary.

What is a LINE? Is a drawing made with lines?

What can you use to make lines? Crayons, string, etc.

SUGGESTED ART INSTRUCTION TO BE USED IN CONNECTION WITH LINE CHARTS

Line **Kindergarten**

Draw with black magic marker on white drawing paper to see how lines make pictures.

Draw with primary pencil on varied sizes of manila paper (3 x 5, 6 x 9, 3 x 9, etc.) to find out that drawings can be small, long, etc.

Draw lines with a water color brush and black paint to find out that drawings can be big. Use paper (18 x 24).

Draw with a water color brush (and/or Q-tip applicators) and water color paint to see that line can be all colors.

After doing exercises in gym, try drawing how you feel when you stand on your head or turn a somersault.

Try drawing with crayon on long, narrow paper to emphasize up and down, across, lines that go under and over, in and out.

Do some drawing every day. (Don't tell children "what to draw" too often.) Collect drawings to make a file for each child to see how the individual child develops his own visual constructions.

Use wire to make drawing. Talk about Sculpture.

TALK ABOUT TEXTURE

In what ways do we "feel" textures?
- with our hands
- with our skin
- with our feet
- with our tongue and mouth
- and our EYES

What words do we use to tell about texture?
(develop vocabulary)

What do our eyes tell us about texture?
shiny, dull; bumpy, ribby.

What interesting textures do we have on ourselves, hair, skin, teeth, beard, fingernails? On our clothes?

Are there any textures in the room?

What textures do changes in the weather or the seasons bring?

SUGGESTED ART INSTRUCTION TO BE USED IN CONNECTION WITH TEXTURE AND PATTERN CHARTS

Texture and Pattern **Kindergarten**

Make a texture rubbing with a big piece of newsprint and the crayon on its side to explore the patterns that different textures make. Overlap them.

Clay can be textured by pressing objects into it so that you can feel the bumps with your fingers.

Do a collage with cloth and materials such as sandpaper, corrugated cardboard, roving, cord - to make a "feeling" picture---on a 9 x 12 bristol board.

Make imprint patterns with poster paint and gadgets, objects, cardboard edges on small colored paper to study placement, overlapping, size and scale---things in rows, big and little, even spaces, irregular spaces.

Paint a pattern with water color or poster color to see what the brush will do---or add Q-tips along to make spots, groups of spots.

Try a radial pattern by tearing colored paper and combine with show-card paint.

Make a pattern by painting lines up and down and then painting them across to make a plaid. Try some with even, some with irregular spaces between.

APPENDIX C

Description of Teacher In-Service Training

Description of Teacher In-Service Training

Time schedules outlining meeting dates and dates for culminating art activities were presented to the classroom teachers at their first in-service meeting. At the succeeding meetings there was discussion about the children's reaction to the activities during the previous two weeks of instruction. The Art Charts (Appendix A) for each of the art elements were introduced; the Suggested Art Instructions (Appendix B) were discussed with the teacher so that art terms and art concepts would be understood. The Suggested Art Instruction for the developmental program during the two weeks allotted for each art element was explained, and plans for the children's production of art work were made clear.

During the two weeks following the in-service training, the teacher introduced the art element to be studied and each day the students worked on related concepts. Once a week the art consultant and teacher worked jointly with the children making use of the Art Charts.

This procedure was varied in ways appropriate to the different Modes of instruction. It was necessary to vary the schedules of in-service training meetings, so that there would be no contact between teachers working with the different Modes of instruction. The selection of only one Kindergarten class in a school also minimized the chance of contamination of the research design. All in-service meetings with the classroom teachers and art consultants were carefully planned so that possible resentment about "more meetings" would be kept to the minimum.

The following is an example of an information sheet given to classroom teachers at their first in-service meeting.

GROUP III

Your participation in this comparative study of art teaching methods is appreciated. Much emphasis has been given to the importance of early experiences in the learning of the young child. Through this program of visual stimulation and planned art instruction, we hope to increase the perceptual learning of the Kindergarten Child.

Four two-week periods of "INTENSIVE ART INSTRUCTION"

Period I	February 3 through February 14	
	TEXTURE-PATTERN	Kindergarten teacher In-service Thursday, Noon, January 30
Period II	February 24 through March 14	
	LINE	Kindergarten teacher In-service Thursday, Noon, February 20
Period III	March 24 through April 4	
	COLOR	Kindergarten teacher In-service Thursday, Noon, March 20
Period IV	April 21 through May 2	
	SHAPE	Kindergarten teacher In-service Thursday, Noon, April 17

The Kindergarten classroom teacher will have the following materials to work with:

1. Art Charts
2. Written suggestions for art instruction and motivation

Ways of using these materials will be discussed at In-service meetings. The art consultant should not be involved in the Kindergarten classroom during the intensive training period.

The Culminating Art Activity should be sent to the Art Office in the envelopes provided on the following dates:

February 14
March 14
April 4
May 2

For all periods please work with the same group (A.M. or P.M.)

This will be the only art work we will ask you to send to the Art Office. It should be done with care. The children should be allowed time to finish it, even coaxed to finish, if necessary. Please label each art work with name of student only.

It is of vital importance that this material be received promptly!

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APPENDIX D

Description of Art Consultant Activities

Description of Art Consultant Activities
In The Grand Rapids Public Schools

The role of the Art Consultant is to teach the teachers how to teach art. Therefore, it is important that the classroom teacher remain in the room to learn art education techniques so that in the future he may be able to proceed without help.

The Art Consultant teaches children in order to demonstrate methods, art processes, and art techniques for the teachers.

The Art Consultant brings visual aids that will inspire the children and help the teachers to know what to expect in the way of standards of color, design, and creativity.

The Art Consultant will also survey the art work in the building and plan time for personal consultation with the individual classroom teachers.

The art schedule should remain flexible to insure the best utilization of the Art Consultant's time in a building.

The Art Consultant schedules 5 or 6 teachers a day on a flexible basis. The scheduling is done each week in preparation for the following week, or it may be done 2 or 3 weeks in advance. Availability of materials must be considered in the planning. Each Art Consultant works with 55-65 teachers at all levels (K-6), which means that he may work with a given class once every third week.

During the Kindergarten research project, the Art Consultant worked with the Kindergarten teacher once a week or not at all depending on the Mode of instruction involved.

APPENDIX E

Socio-Economic Status of Schools

Socio-Economic Status of Schools

Mode 1	1-Middle
	2-Middle
	3-High
	4-Low
	5-Low
	6-High
Mode 2	7-High
	8-High
	9-Low
Mode 3	10-High
	11-Middle
	12-Middle
Mode 4	13-Low
	14-High
	15-Low
Mode 5	16-High
	17-Middle
	18-Low
Mode 6	19-Low
	20-Low
	21-High
Mode 7	22-Low
	23-High
	24-Middle
Mode 8	25-Low
	26-Middle
	27-Middle
	28-Low
	29-High
	30-High

APPENDIX F

Time Periods

Time Periods

	Modes 1,5,6	Modes 2,3,7	Mode 4	Art Charts Unused
Two Weeks of Instruction	Color	Texture	Shape	Line
Four Weeks of Instruction	Shape	Line	Color	Texture
Six Weeks of Instruction	Texture	Color	Line	Shape
Eight Weeks of Instruction	Line	Shape	Texture	Color

APPENDIX G

Protocols

Initial Evaluation Protocols

1	2	3	4
COLOR			
Indiscriminate use of colors.	Some awareness of color differences.	Colors selected for quality of individual colors.	Selective about colors as they relate to each other.
DETAIL (Elaboration--Pattern--Texture)			
Lack of detail	Incomplete detail.	Moderate detail. Some texture-pattern.	Elaborate detail. Keen awareness of texture and pattern.
SUBJECT MATTER (OR FORM)			
No idea of subject matter.	Cliché idea.	Expressive---some original ideas.	Fluent expression---original ideas.
SHAPE			
Scribbles, makes basic circle shapes.	Makes basic shapes using circles and straight lines.	Makes some differentiated shapes. Uses some big and little shapes.	Has ability to use wide range of complex differentiated shapes and symbols.
COMPOSITION (Scale, proportion, balance, rhythm, emphasis, variety, contrast)			
Makes incomplete composition, accidental placement. No space or size relationships attempted.	Makes a slight attempt to control relationships. Composition is irregular and spotty.	Makes a fairly complete composition. Uses adequate control of shape, size, and placement relationships.	Makes a well-designed unified composition. Shows deliberate control of space, size, and placement relationships.

Color Judgments
(Redeveloped Protocols)

1

Three or less colors with very little interaction of one color next to another color, or one color within or around or between other colors.

No alteration of color or the alteration is accidental.

2

Limited interaction of colors next to, within, around, and between other colors with limited contact at either points and/or boundaries.

Little alteration of colors.

3

Partial interaction of colors beside, within, around, and between other colors with contact at both points and boundary areas with dominance of boundary contacts.

Some alteration of colors.

More than half of the paper filled with color.

4

Complete interaction of colors beside, within, around, and between other colors, giving rhythmic movement repetition with contact at points and boundaries.

Some alteration of colors.

More than half of the paper area filled with color.

Shape Judgments
(Redeveloped Protocols)

1

Scribbled, poorly executed shapes.

Boundaries or edges of shapes are not well-defined.

Little attempt to combine shapes.

2

Largely confined to simple, basic shapes - circles, squares, rectangles, triangles.

Lines or masses defining the shapes may be irregular in execution, but leave little question as to the boundaries or edges of shapes.

Simple shape combinations and/or isolated shapes scattered over the paper area.

3

A variety or variations of kinds and sizes of shapes which are well-defined either as mass or by line.

Basic shapes may be altered (for example, an oval).

Some shapes combined and/or divided and placed within, outside, around, and/or beside other shapes. Shapes may combine or connect to form a complex unit.

4

A variety or variations of kinds and sizes of shapes which are well-defined either as mass or by line.

Basic shapes may be altered.

Shapes combined and/or divided and placed within, outside, around, and/or beside other shapes to form a complex unit. No shape could be left out of the total picture without changing the meaning and to achieve this completeness, no more is needed.

Line Judgments

(Redeveloped Protocols)

1

No line or half or more of the lines are scribbles - meaningless strokes & wiggly lines.

2

No more than two different kinds of lines - straight, curved, long or short.

Simple line relationships with a few lines intersecting, touching or connecting to outline a shape.

3

At least 3 different kinds of lines - straight, curved, crooked, zig-zag, wavy, varied in thickness and length.

Most of the lines connect, intersect, are parallel, outline and divide a shape.

4

Rich and elaborate use of lines: straight, crooked, curved, zig-zag, wavy lines, varied in thickness and length, which connect, intersect, are parallel, outline a shape, and/or divide the paper area.

Complex line relationships which give rhythm and achieve a sense of completeness over the total paper area.

Pattern and Texture Judgments

(Redeveloped Protocols)

1

One or two repetitions of sets
of similar lines, colors, shapes, (or dots, daubs, or strokes)
or motifs indicating pattern or texture
placed at regular or irregular intervals.

2

Three or four repetitions of sets
of similar lines, colors, shapes, (or dots, daubs, or strokes)
or motifs indicating pattern or texture
placed at regular or irregular intervals.

3

Five to seven repetitions of sets
of similar lines, colors, shapes, (or dots, daubs, or strokes)
or motifs indicating pattern or texture
placed at regular or irregular intervals.

4

Eight or more repetitions of sets
of similar lines, colors, shapes, (or dots, daubs, or strokes)
or motifs indicating pattern or texture
placed at regular or irregular intervals.

Line Judgments For Drawing

(Redeveloped Protocols)

1

Scribbly -

At least half the lines are meaningless strokes and wiggly lines. Major or minor units may be emerging through the scribbles.

2

Simple line relationships -

Line, intersecting, touching or connecting to make simple major and/or minor units. Few details.

3

Beginning elaboration -

Most of the lines connect, intersect, divide, and are grouped together to form a detailed major unit or units. Minor units may still be simple without details. Incomplete.

4

Predominance of elaboration -

Details on both major and minor units.

Complex line relationships which give rhythm and achieve a sense of completeness over the total paper area.

Shape Judgments For Drawing

(Redeveloped Protocols)

1

Scribbled Shapes -

Irregular execution of shapes.

Lines meander, creating "accidental" shapes

or No shapes.

2

Simple Shapes and Shape Combinations -

Simple combinations of circles, squares, triangles.

Scattered shapes.

Little use of detail shapes.

3

More Variety Added to Simple Combinations -

Variety in shape sizes and proportions.

More complex shape combinations.

Variety of detail shapes within the bigger shape.

Attempt more "difficult" shapes (differentiation).

Incomplete.

4

Rich Variety of Shape Combinations -

Complex Shape combinations.

Repetition of a variety of shapes and sizes.

Rich variety of detail shapes within a bigger shape.

Rhythm and completeness.

APPENDIX H

Tables Showing Analysis of Specific Dimensions of Art Productions

TABLE H.1

MEAN ARTISTIC LEVEL OF LINE DIMENSION FOR ALL DRAWINGS BY MODE AND SES

					MODE				
SES	1	2	3	4	5	6	7	8	Mean
High	3.34	2.92	2.65	2.15	2.37	2.95	3.11	2.81	2.8290
Middle	2.79	000	2.34	000	2.70	000	2.76	2.70	2.6620
Low	2.60	2.36	000	2.04	2.49	2.66	2.82	2.55	2.4955
Mean	2.8876	2.7433	2.4772	2.0870	2.5197	2.7934	2.8984	2.6849	

Main Effect of Mode: $F = 23.49$ $p < .01$

Main Effect of SES: $F = 31.19$ $p < .01$

Interaction Effect of Mode and SES: $F = 4.12$ $p < .01$

TABLE H.2

MEAN ARTISTIC LEVEL OF LINE DIMENSION FOR ALL DRAWINGS BY SES AND TIME

			TIME		
SES	1	2	3	4	Mean
High	3.01	2.77	2.79	2.79	2.828
Middle	2.70	2.35	2.68	2.81	2.662
Low	2.60	2.57	2.52	2.41	2.493
Mean	2.838	2.595	2.646	2.652	

Main Effect of SES: $F = 24.21$ $p < .01$

Main Effect of Time: $F = 3.50$ $p < .05$

Interaction Effect of SES and Time: $F = 2.82$ $p < .01$

Table H.3

MEAN ARTISTIC LEVEL OF LINE DIMENSION FOR ALL DRAWINGS BY MODE AND TIME

	Mode								
	1	2	3	4	5	6	7	8	Mean
Time									Mean
Two Weeks of Instruction	000	2.92	2.73	000	000	000	2.83	000	2.840
Four Weeks of Instruction	2.33	2.56	2.30	000	000	000	2.97	000	2.594
Six Weeks of Instruction	2.91	000	000	2.13	2.39	2.92	000	2.63	2.645
Eight Weeks of Instruction	2.87	000	000	2.04	2.66	2.65	000	2.75	2.653
Mean	2.884	2.744	2.473	2.085	2.520	2.791	2.898	2.690	

Main Effect of Mode: F = 21.25 $p < .01$

Main Effect of Time: F = 3.56 $p < .01$

Interaction Effect of Mode and Time: F = 4.11 $p < .01$

TABLE H.4

MEAN ARTISTIC LEVEL OF LINE DIMENSION FOR ALL DRAWINGS BY MODE AND TIME DURING TWO AND FOUR WEEKS OF INSTRUCTION

	Mode			
	2	3	7	Mean
Time				
Two Weeks of Instruction	2.92	2.73	2.83	2.84
Four Weeks of Instruction	2.56	2.30	2.97	2.598
Mean	2.74	2.47	2.89	

Main Effect of Mode: F = 12.40 $p < .01$

Main Effect of Time: F = 10.96 $p < .01$

Interaction Effect of Mode and Time: F = 7.93 $p < .01$

TABLE H.5

MEAN ARTISTIC LEVEL OF LINE DIMENSION FOR ALL DRAWINGS BY MODE AND TIME DURING SIX AND EIGHT WEEKS OF INSTRUCTION

			Mode			
	1	4	5	6	8	Mean
Time						
Six Weeks of Instruction	2.91	2.13	2.39	2.92	2.63	2.645
Eight Weeks of Instruction	2.87	2.04	2.66	2.65	2.75	2.652
Mean	2.89	2.0846	2.519	2.791	2.690	

Main Effect of Mode: F = 29.57 $p < .01$

Main Effect of Time: F = 0.03 p < NS

Interaction Effect of Mode and Time: F = 2.74 $p < .05$

TABLE H.6

MEAN ARTISTIC LEVEL OF SHAPE DIMENSION FOR ALL DRAWINGS BY MODE AND SES

					Mode				
	1	2	3	4	5	6	7	8	Mean
SES									
High	3.12	2.84	2.61	2.06	2.39	2.95	2.98	2.67	2.7321
Middle	2.74	000	2.32	000	2.60	000	2.63	2.62	2.5949
Low	2.46	2.32	000	1.86	2.33	2.59	2.57	2.51	2.3742
Mean	2.7573	2.6759	2.4483	1.9492	2.4313	2.7557	2.7248	2.5988	

Main Effect of Mode: F = 22.12 $p < .01$

Main Effect of SES: F = 32.67 $p < .01$

Interaction Effect of Mode and SES F = 2.37 $p < .01$

TABLE H.7

MEAN ARTISTIC LEVEL OF SHAPE DIMENSION FOR ALL DRAWINGS BY SES AND TIME

	Time - Weeks of Instruction				
	Two	Four	Six	Eight	
SES					Mean
High	2.91	2.71	2.76	2.62	2.733
Middle	2.57	2.35	2.61	2.73	2.544
Low	2.40	2.47	2.43	2.27	2.372
Mean	2.706	2.544	2.580	2.515	

Main Effect of SES: F = 29.56 p < .01

Main Effect of Time: F = 2.54 p < NS

Interaction Effect of SES and Time: F = 3.22 p < .01

TABLE H.8

MEAN ARTISTIC LEVEL OF SHAPE DIMENSION FOR ALL DRAWINGS BY MODE AND TIME

	Mode								
	1	2	3	4	5	6	7	8	
Time - Weeks of Instruction									Mean
Two	000	2.78	2.69	000	000	000	2.64	000	2.7074
Four	2.00	2.58	2.29	000	000	000	2.82	000	2.5471
Six	2.88	000	000	1.96	2.28	2.89	000	2.59	2.5805
Eight	2.65	000	000	1.94	2.60	2.60	000	2.61	2.5173
Mean	2.7567	2.6820	2.4506	1.9499	2.4337	2.7519	2.7280	2.6000	

Main Effect of Mode: F = 21.41 p < .01

Main Effect of Time: F = 2.85 p < .05

Interaction Effect of Mode and Time: F = 4.67 p < .01

TABLE H.9

MEAN ARTISTIC LEVEL OF SHAPE DIMENSION FOR ALL DRAWINGS BY MODE AND TIME DURING TWO AND FOUR WEEKS OF INSTRUCTION

	Mode			
	2	3	7	Mean
Time				
Two Weeks of Instruction	2.78	2.69	2.64	2.746
Four Weeks of Instruction	2.58	2.29	2.82	2.554
Mean	2.68	2.45	.2.728	

Main Effect of Mode: F = 5.90 p < .01

Main Effect of Time: F = 4.30 p < .05

Interaction Effect of Mode and Time: F = 6.92 p< .01

TABLE H.10

MEAN ARTISTIC LEVEL OF SHAPE DIMENSION FOR ALL DRAWINGS BY MODE AND TIME DURING SIX AND EIGHT WEEKS OF INSTRUCTION

	Mode					
	1	4	5	6	8	Mean
Time						
Six Weeks of Instruction	2.88	1.96	2.28	2.89	2.59	2.580
Eight Weeks of Instruction	2.65	1.94	2.60	2.60	2.61	2.517
Mean	2.765	1.949	2.433	2.751	2.60	

Main Effect of Mode: F = 32.03 p < .01

Main Effect of Time: F = 1.52 p < NS

Interaction Effect of Mode and Time F = 3.90 p < .01

TABLE H.11

MEAN ARTISTIC LEVEL OF TEXTURE-PATTERN DIMENSION FOR ALL DRAWINGS BY MODE AND SES

				Mode					
SES	1	2	3	4	5	6	7	8	Mean
High	3.76	3.19	3.31	2.81	2.95	3.50	3.51	3.12	3.2789
Middle	3.36	000	2.76	000	3.00	000	3.20	3.01	3.0886
Low	3.07	2.70	000	2.42	2.65	3.00	2.98	2.89	2.8298
Mean	3.3798	3.0354	3.0034	2.5939	2.8468	3.2301	3.2234	3.0052	

Main Effect of Mode: $F = 13.01$ $p < .01$

Main Effect of SES: $F = 31.64$ $p < .01$

Interaction Effect of Mode and SES: $F = 1.11$ $p <$ NS

TABLE H.12

MEAN ARTISTIC LEVEL OF TEXTURE-PATTERN DIMENSION FOR ALL DRAWINGS BY SES AND TIME

	Time (Weeks of Instruction)				
SES	Two	Four	Six	Eight	Mean
High	3.16	3.43	3.32	3.22	3.277
Middle	2.86	2.97	3.07	3.27	3.090
Low	2.56	3.14	2.92	2.71	2.8307
Mean	2.944	3.222	3.086	3.040	

Main Effect of SES: $F = 29.36$ $p < .01$

Main Effect of Time: $F = 3.88$ $p < .01$

Interaction Effect of SES and Time: $F = 2.56$ $p < .05$

TABLE H.13

MEAN ARTISTIC LEVEL OF TEXTURE-PATTERN DIMENSION FOR ALL DRAWINGS BY MODE AND TIME

				Mode					
	1	2	3	4	5	6	7	8	Mean
Time-Weeks of Instruction									
Two	000	2.93	2.98	000	000	000	2.93	000	2.943
Four	3.33	3.14	3.03	000	000	000	3.53	000	3.225
Six	3.33	000	000	2.81	2.51	3.23	000	3.19	3.084
Eight	3.43	000	000	2.37	3.21	3.23	000	2.82	3.041
Mean	3.379	3.030	3.001	2.588	2.846	3.230	3.223	3.004	

Main Effect of Mode: $F = 12.42$ $p < .01$

Main Effect of Time: $F = 3.54$ $p < .05$

Interaction Effect of Mode and Time: $F = 7.32$ $p < .01$

TABLE H.14

MEAN ARTISTIC LEVEL OF TEXTURE-PATTERN DIMENSION FOR ALL DRAWINGS BY MODE AND TIME DURING TWO AND FOUR WEEKS OF INSTRUCTION

		Mode		
	2	3	7	Mean
Time-Weeks of Instruction				
Two	2.93	2.98	2.93	2.942
Four	3.14	3.03	3.53	3.233
Mean	3.032	3.009	3.22	

Main Effect of Mode: $F = 2.41$ $p <$ NS

Main Effect of Time: $F = 9.47$ $p < .01$

Interaction Effect of Mode and Time: $F = 2.94$ $p <$ NS

TABLE H.15

MEAN ARTISTIC LEVEL OF TEXTURE-PATTERN DIMENSION FOR ALL DRAWINGS BY MODE AND TIME DURING SIX AND EIGHT WEEKS OF INSTRUCTION

	Mode					
	1	4	5	6	8	Mean
Time						
Six	3.33	2.81	2.51	3.23	3.19	3.0837
Eight	3.43	2.37	3.21	3.23	2.82	3.0405
Mean	3.38	2.588	2.846	3.23	3.0042	

Main Effect of Mode: F = 20.99 $p < .01$

Main Effect of Time: F = 0.57 p < NS

Interaction of Mode and Time: F = 9.68 $p < .01$

TABLE H.16

MEAN ARTISTIC LEVEL OF COLOR DIMENSION FOR ALL PAINTINGS BY MODE AND SES

	Mode								
	1	2	3	4	5	6	7	8	Mean
SES									
High	2.41	2.51	2.13	1.97	2.27	2.15	2.71	2.04	2.2858
Middle	3.09	000	1.97	000	2.17	000	2.03	2.21	2.3773
Low	2.67	2.42	000	1.75	2.73	2.01	2.59	2.35	2.3026
Mean	2.7291	2.4855	2.0304	1.8426	2.4224	2.0703	2.4629	2.2048	

Main Effect of Mode: F = 25.41 $p < .01$

Main Effect of SES: F = 1.01 p < NS

Interaction Effect of Mode and SES: F = 7.98 $p < .01$

TABLE H.17

MEAN ARTISTIC LEVEL OF COLOR DIMENSION FOR ALL PAINTINGS BY SES AND TIME

	Time (Weeks of Instruction)				
	Two	Four	Six	Eight	Mean
SES					
High	2.25	2.11	2.48	2.44	2.286
Middle	2.58	2.62	2.03	1.94	2.377
Low	2.21	2.31	2.66	2.31	2.302
Mean	2.315	2.311	2.378	2.261	

Main Effect of SES: $F = 1.32$ $p <$ NS

Main Effect of Time: $F = 0.68$ $p <$ NS

Interaction Effect of SES and Time: $F = 11.56$ $p < .01$

TABLE H.18

MEAN ARTISTIC LEVEL OF COLOR DIMENSION FOR ALL PAINTINGS BY MODE AND TIME DURING TWO AND FOUR WEEKS OF INSTRUCTION

	Mode					
	1	4	5	6	8	
Time						Mean
Two Weeks of Instruction	2.88	1.86	2.26	2.21	2.07	2.315
Four Weeks of Instruction	2.58	1.82	2.58	1.93	2.34	2.309
Mean	2.73	1.84	2.42	2.073	2.2028	

Main Effect of Mode: $F = 35.85$ $p < .01$

Main Effect of Time: $F = 0.04$ $p <$ NS

Interaction Effect of Mode and Time: $F = 6.39$ $p < .01$

TABLE H.19

MEAN ARTISTIC LEVEL OF COLOR DIMENSION FOR ALL PAINTINGS BY MODE AND TIME DURING SIX AND EIGHT WEEKS OF INSTRUCTION

	Mode			
	2	3	7	
Time				Mean
Six Weeks of Instruction	2.38	2.23	2.54	2.379
Eight Weeks of Instruction	2.61	1.84	2.38	2.261
Mean	2.488	2.0309	2.460	

Main Effect of Mode: F = 14.68 p < .01

Main Effect of Time: F = 1.91 p < NS

Interaction Effect of Mode and Time: F = 5.51 p < .01

TABLE H.20

MEAN ARTISTIC LEVEL OF LINE DIMENSION FOR ALL PAINTINGS BY MODE AND SES

	Mode								
	1	2	3	4	5	6	7	8	
SES									Mean
High	2.52	2.31	2.11	2.20	2.16	2.57	2.37	2.23	2.3466
Middle	2.11	000	2.21	000	2.32	000	2.53	2.29	2.2488
Low	1.88	2.39	000	1.86	2.58	2.21	2.02	2.21	2.1294
Mean	2.2015	2.3317	2.1722	2.0031	2.3784	2.3651	2.3088	2.2428	

Main Effect of Mode: F = 4.52 p < .01

Main Effect of SES: F = 9.58 p < .01

Interaction Effect of Mode and SES: F = 5.52 p < .01

TABLE H.21

MEAN ARTISTIC LEVEL OF LINE DIMENSION FOR ALL PAINTINGS BY SES AND TIME

	Time (Weeks of Instruction)				
	Two	Four	Six	Eight	
SES					Mean
High	2.43	2.28	2.30	2.25	2.324
Middle	2.25	2.17	2.45	2.17	2.247
Low	2.09	2.14	2.23	2.17	2.130
Mean	2.250	2.199	2.332	2.211	

Main Effect of SES: F = 8.75 p < .01

Main Effect of Time: F = 1.45 p < NS

Interaction Effect of SES and Time: F = 1.56 p < NS

TABLE H.22

MEAN ARTISTIC LEVEL OF LINE DIMENSION FOR ALL PAINTINGS BY MODE AND TIME DURING TWO AND FOUR WEEKS OF INSTRUCTION

	Mode					
	1	4	5	6	8	
Time - Weeks of Instruction						Mean
Two	2.25	1.94	2.38	2.52	2.26	2.254
Four	2.15	2.08	2.37	2.20	2.23	2.198
Mean	2.20	2.007	2.375	2.363	2.245	

Main Effect of Mode: F = 6.11 p < .01

Main Effect of Time: F = 1.35 p < NS

Interaction Effect of Mode and Time: F = 1.86 p < NS

TABLE H.23

MEAN ARTISTIC LEVEL OF LINE DIMENSION FOR ALL PAINTINGS BY MODE AND TIME DURING SIX AND EIGHT WEEKS OF INSTRUCTION

	Mode 2	 3	 7	
Time				Mean
Six Weeks of Instruction	2.42	2.19	2.38	2.33
Eight Weeks of Instruction	2.24	2.16	2.23	2.208
Mean	2.335	2.174	2.305	

Main Effect of Mode: $F = 2.05$ $p < \text{NS}$

Main Effect of Time: $F = 2.84$ $p < \text{NS}$

Interaction Effect of Mode and Time: $F = .51$ $p < \text{NS}$

TABLE H.24

MEAN ARTISTIC LEVEL OF SHAPE DIMENSION FOR ALL PAINTINGS BY MODE AND SES

	Mode 1	 2	 3	 4	 5	 6	 7	 8	
SES									Mean
High	2.58	2.52	2.43	1.95	2.19	2.60	2.69	2.31	2.4226
Middle	2.60	000	2.33	000	2.20	000	2.53	2.42	2.4360
Low	2.19	2.24	000	2.11	2.63	2.43	2.29	2.13	2.2640
Mean	2.4856	2.4440	2.3677	2.0426	2.3691	2.5032	2.5146	2.2833	

Main Effect of Mode: $F = 6.23$ $p < .01$

Main Effect of SES: $F = 4.52$ $p < .05$

Interaction Effect of Mode and SES: $F = 3.71$ $p < .01$

TABLE H.25

MEAN ARTISTIC LEVEL OF SHAPE DIMENSION FOR ALL PAINTINGS BY SES AND TIME

	Time (Weeks of Instruction) Two	Four	Six	Eight	
SES					Mean
High	2.33	2.38	2.48	2.59	2.424
Middle	2.37	2.55	2.48	2.30	2.434
Low	2.14	2.40	2.18	2.37	2.266
Mean	2.264	2.429	2.417	2.461	

Main Effect of SES: F = 5.37 $p < .01$

Main Effect of Time: F = 4.33 $p < .01$

Interaction Effect of SES and Time: F = 2.16 $p < .05$

TABLE H.26

MEAN ARTISTIC LEVEL OF SHAPE DIMENSION FOR ALL PAINTINGS BY MODE AND TIME DURING TWO AND FOUR WEEKS OF INSTRUCTION

	Mode 1	4	5	6	8	
Time - Weeks of Instruction						Mean
Two	2.39	1.99	2.22	2.46	2.22	2.263
Four	2.53	2.11	2.52	2.55	2.34	2.428
Mean	2.485	2.047	2.37	2.503	2.279	

Main Effect of Mode: F = 9.73 $p < .01$

Main Effect of Time: F = 10.47 $p < .01$

Interaction Effect of Mode and Time: F = .46 p < NS

Table H.27

MEAN ARTISTIC LEVEL OF SHAPE DIMENSION FOR ALL PAINTINGS BY MODE AND TIME DURING SIX AND EIGHT WEEKS OF INSTRUCTION

	Mode			
	2	3	7	Mean
Time (Weeks of Instruction)				Mean
Six	2.43	2.39	2.43	2.4166
Eight	2.45	2.34	2.60	2.458
Mean	2.439	2.364	2.515	

Main Effect of Mode: $F = 1.47$ $p <$ NS

Main Effect of Time: $F = 0.40$ $p <$ NS

Interaction Effect of Mode and Time: $F = 0.74$ $p <$ NS

Table H.28

MEAN ARTISTIC LEVEL OF TEXTURE-PATTERN DIMENSION FOR ALL PAINTINGS BY MODE AND SES

	Mode								
	1	2	3	4	5	6	7	8	Mean
SES									
High	3.28	3.25	2.72	2.84	2.70	3.28	3.14	3.22	3.1053
Middle	3.16	000	3.10	000	2.83	000	3.43	3.58	3.2364
Low	3.26	3.29	000	3.01	3.44	2.97	2.61	2.78	3.0351
Mean	3.2304	3.261	2.9565	2.9384	3.037	3.1035	3.0620	3.1848	

Main Effect of Mode: $F = 3.70$ $p < .01$

Main Effect of SES: $F = 6.85$ $p < .01$

Interaction Effect of Mode and SES: $F = 7.29$ $p < .01$

TABLE H.29

MEAN ARTISTIC LEVEL OF TEXTURE-PATTERN DIMENSION FOR ALL PAINTINGS BY SES AND TIME

	Time (Weeks of Instruction)				
	Two	Four	Six	Eight	Mean
SES					
High	3.13	3.11	3.15	3.03	3.108
Middle	3.18	3.33	3.29	3.11	3.234
Low	2.99	3.12	2.75	3.17	3.033
Mean	3.086	3.167	3.109	3.079	

Main Effect of SES: $F = 5.37$ $p < .01$

Main Effect of Time: $F = 1.08$ $p <$ NS

Interaction Effect of SES and Time: $F = 1.40$ $p <$ NS

TABLE H.30

MEAN ARTISTIC LEVEL OF TEXTURE-PATTERN DIMENSION FOR ALL PAINTINGS BY MODE AND TIME DURING TWO AND FOUR WEEKS OF INSTRUCTION

	Mode					
	1	4	5	6	8	Mean
Time-Weeks of Instruction						
Two	3.21	2.94	2.80	3.05	3.22	3.090
Four	3.25	2.95	3.28	3.17	3.15	3.169
Mean	3.23	2.944	3.04	3.108	3.1855	

Main Effect of Mode: $F = 3.32$ $p < .05$

Main Effect of Time: $F = 1.88$ $p <$ NS

Interaction Effect of Mode and Time: $F = 2.22$ $p <$ NS

TABLE H.31

MEAN ARTISTIC LEVEL OF TEXTURE-PATTERN DIMENSION FOR ALL PAINTINGS BY MODE AND TIME DURING SIX AND EIGHT WEEKS OF INSTRUCTION

	Mode			
	2	3	7	Mean
Time-Weeks of Instruction				
Six	3.27	3.06	2.98	3.109
Eight	3.26	2.86	3.14	3.0786
Mean	3.265	2.957	3.06	

Main Effect of Mode: $F = 3.75$ $p < .05$

Main Effect of Time: $F = 0.06$ $p <$ NS

Interaction Effect of Mode and Time: $F = 1.14$ $p <$ NS

APPENDIX I

Code Book

GENERAL IDENTIFICATION INFORMATION

Each piece of art work is marked with four numbers -

i.e. - 1-1-1-0078

The 1st # refers to group

The 2nd # refers to school

The 3rd # refers to sequence

The 4th # refers to the piece (art work)

COLUMN 1

Study Number

Always Code 1

COLUMN 2

Teaching Modality

Group #1	(first number on back of art work)	Code 1
Group #2	" " " " " " "	Code 2
Group #3	" " " " " " "	Code 3
Group #4	" " " " " " "	Code 4
Group #5	" " " " " " "	Code 5
Group #6	" " " " " " "	Code 6
Group #7	" " " " " " "	Code 7
Group #8	" " " " " " "	Code 8

COLUMNS 3, 4

School Number

Code second number on art work

01 - 30

COLUMN 5

Sequence of Instruction

(Use third number on back of art work)

Number 1 . . . . Code 1
Number 2, 3 . . . . Code 2
Number 4 . . . . Code 3
Number 5, 6 . . . . Code 4
Number 7 . . . . Code 5
Number 8 . . . . Code 6

COLUMNS 6, 7, 8, 9

Art work numbers

The number for each piece of art work (0001-N) is the fourth number on the back of each piece of art work.

COLUMNS 10, 11

Number of students in each class

Find school number in Table 1 (2nd number on art work)
Then find number in class in row (2) (Table 1)
Code as indicated

COLUMN 12

Socio - Economic Strata

Find school number in Table 1 (2nd number on art work)
Then find code number in row (3) (Table 1)

TABLE 1.

(1) School Code	(2) Number In Class	(3) S.E.S. Code
01	28	2
02	26	2
03	23	3
04	20	1
05	20	1
06	32	3
07	28	3
08	26	3
09	26	1
10	28	3
11	24	2
12	23	2
13	23	1
14	33	3
15	23	1
16	20	3
17	22	2
18	26	1
19	21	1
20	21	1
21	29	3
22	25	1
23	26	3
24	21	2
25	22	1
26	20	2
27	25	2
28	25	1
29	26	3
30	17	3

COLUMN 13

Scoring Color (see ballot on each piece of work)
Code 1, 2, 3, or 4 as indicated.
Code 0 if N.A.

COLUMN 14

Scoring Line (see ballot on each piece of work)
Code 1, 2, 3, or 4 as indicated.

COLUMN 15

Scoring Shape (see ballot on each piece of work)
Code 1, 2, 3, or 4 as indicated.

COLUMN 16

Scoring Pattern & Texture (see ballot on each piece of work)
Code 1, 2, 3, or 4 as indicated.

SAMPLE BALLOT

i.e., TOTAL 10

	COLOR	LINE	SHAPE	PATTERN & TEXTURE
1				
2	X			X
3		X	X	
4				

COLUMNS 17, 18, 19

Mean scores for art work.
Calculate ballot total
Find total on Table 2
Code from right side of table
If Column 13 above is 0 (art work is a drawing)
Use this procedure with Table 3

TABLE 2

It it is a PAINTING and -

If	total	score	is	4	Code	100	in	Column	17,	18,	19
"	"	"	"	5	"	125	"	"	"	"	"
"	"	"	"	6	"	150	"	"	"	"	"
"	"	"	"	7	"	175	"	"	"	"	"
"	"	"	"	8	"	200	"	"	"	"	"
"	"	"	"	9	"	225	"	"	"	"	"
"	"	"	"	10	"	250	"	"	"	"	"
"	"	"	"	11	"	275	"	"	"	"	"
"	"	"	"	12	"	300	"	"	"	"	"
"	"	"	"	13	"	325	"	"	"	"	"
"	"	"	"	14	"	350	"	"	"	"	"
"	"	"	"	15	"	375	"	"	"	"	"
"	"	"	"	16	"	400	"	"	"	"	"

TABLE 3

If it is a Drawing (or Column #13 is 0) use this table

If	total	score	is	3	Code	100	in	Column	17,	18,	19
"	"	"	"	4	"	133	"	"	"	"	"
"	"	"	"	5	"	166	"	"	"	"	"
"	"	"	"	6	"	200	"	"	"	"	"
"	"	"	"	7	"	233	"	"	"	"	"
"	"	"	"	8	"	266	"	"	"	"	"
"	"	"	"	9	"	300	"	"	"	"	"
"	"	"	"	10	"	333	"	"	"	"	"
"	"	"	"	11	"	366	"	"	"	"	"
"	"	"	"	12	"	400	"	"	"	"	"

COLUMN 20

Teacher's Degree

Use second number on art work for school code. Find school in row (1) Table 4, then consult row (2) for Teacher's degree code:

3 years - 1	MA - 4
BA - 2	MS + 10 - 5
BS - 3	BM - 6

COLUMNS 21, 22

Teacher's experience out of Grand Rapids

Use second number on art work for school code. Find school in row (1) Table 4, then consult row (3) for years out of Grand Rapids.

COLUMNS 23, 24

Teacher's experience in Grand Rapids

Use second number on art work for school code. Find school in row (1) Table 4, then consult row (4) for years in Grand Rapids.

COLUMNS 25, 26

Teacher's total experience

Use second number on art work for school code. Find school in row (1) Table 4, then consult row (5) for Teacher's total experience.

TABLE 4

(1) School Code	(2) Degree Code	(3) Years Out Code	(4) Years In Code	(5) Years Total Code
01	2	00	08	08
02	2	00	05	05
03	2	06	01	07
04	2	00	03	03
05	3	00	14	14
06	2	11	15	26
07	4	04	14	18
08	3	01	16	17
09	2	04	08	12
10	3	09	08	17
11	3	07	02	09
12	1	08	05	13
13	5	00	03	03
14	2	02	09	11
15	2	00	06	06
16	3	13	09	22
17	2	00	11	11
18	3	01	04	05
19	2	02	05	07
20	3	00	03	03
21	3	13	09	22
22	1	00	05	05
23	4	03	11	14
24	2	00	03	03
25	4	03	03	06
26	2	00	34	34
27	3	10	01	11
28	2	00	10	10
29	4	00	03	03
30	6	03	01	04

COLUMNS 27, 28

Art Consultant Serving School

Use second number on art work for school code. Find school in row (1) Table 5, then consult row (2) for code of Art Consultant serving school.

COLUMN 29

Art Consultant Degree

Use second number on art work for school code. Find school in row (1) Table 5, then consult row (3) for degree code of Art Consultant.

See Table 5

BA - Code 1
BS - Code 2
MA - Code 3

COLUMN 30

Art Consultant years out of Grand Rapids

Use second number on art work for school code. Find school in row (1) Table 5, then consult row (4) for Art Consultant's years out of Grand Rapids.

COLUMNS 31, 32

Art Consultant years in Grand Rapids

Use second number on art work for school code. Find school in row (1) Table 5, then consult row (5) for Art Consultant's years in Grand Rapids.

COLUMNS 33, 34

Art Consultant total years of experience

Use second number on art work for school code. Find school in row (1) Table 5, then consult row (6) for Art Consultant's total years of experience.

TABLE 5

(1) School Code	(2) Consultant Code	(3) Degree Code	(4) Years Out	(5) Years In	(6) Years Total
01	12	1	0	02	02
02	07	1	0	02	02
03	10	3	0	20	20
04	07	1	0	02	02
05	13	1	0	02	02
06	05	2	8	16	24
07	05	2	8	16	24
08	02	1	0	03	03
09	10	2	0	03	03
10	06	1	2	04	06
11	10	3	0	20	20
12	03	2	0	03	03
13	06	1	2	04	06
14	07	1	0	02	02
15	01	1	4	02	06
16	14	2	2	03	05
17	14	2	2	03	05
18	08	1	5	02	07
19	11	1	0	03	03
20	04	3	8	09	17
21	12	1	0	02	02
22	14	2	2	03	05
23	03	2	0	03	03
24	11	1	0	03	03
25	08	1	5	02	07
26	13	1	0	02	02
27	03	2	0	03	03
28	11	1	0	03	03
29	04	3	8	09	17
30	09	2	0	03	03